Subsidiary decision-making autonomy in multinational enterprises

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Con kính tặng Ba Mẹ, các Chị-Em và các Anh
To my parents, my sisters, and my brothers

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Vo Van Dut
Groningen, August 2013.

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Chapter 1

Introduction[1]

> *"The answer may be more complicated than you think; the amount of autonomy that parent companies grant each venture (subsidiary) should vary depending on the local culture and the type of activity that is being delegated".*
>
> Professor Yoram Zeira – co-author of "Role conflict and role ambiguity of chief executive officers in international joint ventures" published in Journal of International Business Studies (1992) – answering the question: how much decision-making autonomy should corporate parents give their joint ventures or foreign subsidiaries (interview in Harvard Business Review newsletter, January/February, 1998).

1.1. The importance of subsidiary decision-making autonomy

Multinational enterprises (MNEs) can be conceptualized as an inter-organizational network (Barlett & Ghoshal, 1989) or a social community crossing national boundaries (Kogut & Zander, 1993), in which subsidiaries are established in foreign countries. Within this perspective, a subsidiary is viewed as an important source of knowledge, thus contributing to the competitive advantages of the MNE (Birkinshaw et al., 1998; Birkinshaw et al., 2000). One of the core issues in the study of MNEs is how to structure and manage the relationships between the headquarters and their foreign subsidiaries. The management of headquarters-subsidiary relationship is never a simple one (e.g., Asakawa, 1996; Birkinshaw

[1] This entire thesis uses the style "we" instead of "I" for reasons of readability.

et al., 2000; Birkinshaw & Hood, 1998; Johnston, 2005). Foreign subsidiaries require decision-making autonomy to foster creativity and new idea generation for the purpose of increasing their competitive advantages, while the headquarters often demands coordination and control of foreign subsidiaries to ensure their goals (Akasawa, 2001; O'Donnell, 2000). The control-autonomy tension in the relationship between headquarters and subsidiaries makes research of a subsidiary's decision-making autonomy relevant and important. Decision-making autonomy reflects a key characteristic of the value system and the overall organizational structure of a subsidiary in an MNE network as well as a subsidiary's incentives of doing foreign business (Asakawa, 1996, 2001; Brooke, 1984; Brooke & Remmers, 1978). Decision-making autonomy provides a sustainable platform for establishing initiatives of the subsidiary (Birkinshaw, 1997; Birkinshaw et al., 1998; Mudambi, 2011) and indicates the current power-dependence structures between headquarters and foreign subsidiaries. In the end, this affects foreign subsidiaries' performance (Asakawa, 2001; Birkinshaw et al., 1998).

Given the importance of decision-making autonomy in the headquarters-subsidiary relationship, several theories have been developed that focus on subsidiary's decision-making autonomy. For example, the perspective focusing on the role of headquarters in innovative operations of subsidiaries argues that the headquarters has a reasonable understanding of what kind of knowledge it lacks and knows how to organize the firm's operations best (Ciabuschi et al., 2011a, b; Ciabuschi et al., 2012; Forsgren & Holm, 2010). Based on this understanding, the headquarters can find ways of intervening that will guarantee the proper application of its knowledge at the local level. This implies that the degree of a subsidiary's decision-making autonomy is relatively low. Other theories point however to opposite forces. Business network theory, for example, claims that the headquarters is an outsider of the specific business networks in which subsidiaries are embedded. The headquarters thus lacks the local knowledge and faces uncertainty for accessing local information (Andersson & Forsgren, 2000; Andersson et al., 2007; Forsgren et al., 2005; Forsgren, 2008). Consequently, the headquarters will decentralize decisions to subsidiaries for the purposes of local responsiveness (e.g., Ambos et al., 2011; Birkinshaw et al., 1998).

Our contributions to subsidiary decision-making autonomy research are threefold. First, although the literature on the relationship between subsidiary decision-making autonomy and characteristics of the parent company or of the subsidiary is relatively well developed, the relationship between decision-making autonomy and home- and host country contexts is under-explored. Autonomy from a perspective of home- and host country contexts is important because country institutional environments determine an MNE's organizational behavior, overall strategy and predisposition for particular power structures (Kostova, 1999), and resource and knowledge capabilities (Bineto et al., 2003; Verbeke, 2009). This affects the performance of an MNE in general and that of a subsidiary in particular (de Jong et al., 2011; de Jong & van Houten, 2013).

Second, as said above, decision-making autonomy fosters creativity and generates new ideas, which on the one hand benefits subsidiary innovation. On the other hand, a subsidiary with too high decision-making autonomy may hinder a coherent innovation strategy of an MNE (Asakawa, 2001). The literature has focused on the effects of subsidiary- and MNE-level factors as well as internal and external knowledge sources on subsidiary innovation. The role of decision-making autonomy in subsidiary innovation is underexplored. Understanding this relationship is important because innovation is an important source of increasing subsidiary competitive advantages (Frost et al., 2002; Phene & Ameida, 2008), and thus the overall MNE group (Venaik et al., 2005). Our study offers new insights for innovation research at subsidiary level showing the importance of decision-making autonomy in innovative activities of subsidiaries.

Third, several studies have addressed the effect of subsidiary embeddedness on subsidiary innovation (e.g., Andersson et al., 2002; Ciabuschi et al., 2011). Embeddedness concerns the type of internal and external linkages of the subsidiary (Garcia-Pont et al., 2009). Linkages with other partners are crucial to obtain and develop firm-specific strategic assets required for innovation the more so when markets are volatile and risky. However, little is known about the relationship between subsidiary decision-making autonomy, subsidiary embeddedness, and subsidiary innovation. We study this relationship. Understanding this relationship is important because subsidiary decision-making autonomy reflects in part the organizational structure and intra-organizational management of an

overall MNE network (Ambos et al., 2011; Asakawa, 2001), which affects the innovative performance of a subsidiary.

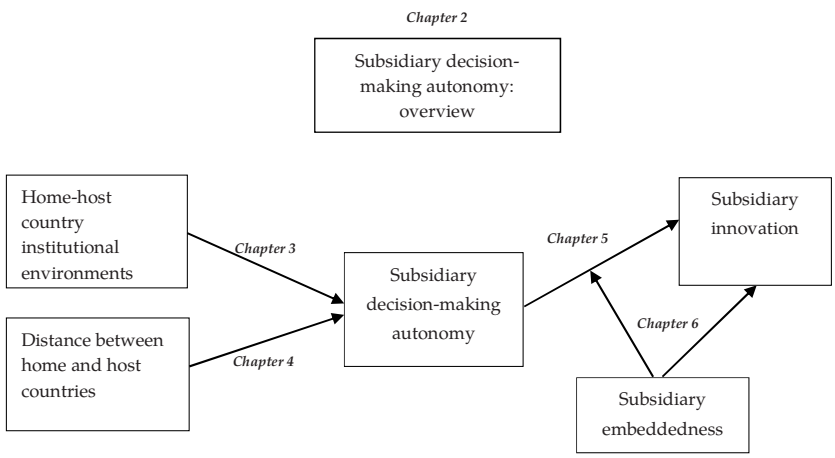
1.2. The structure of this thesis

As we describe in Chapter 2 of this thesis, existing theories used in the context of subsidiary's decision-making autonomy include, among others, the integration-responsiveness framework (Jarillo & Martinez, 1990; Prahalad & Doz, 1987), resource dependence theory (Pfeffer & Salancik, 1978; Medcof, 2001), business network theory (Andersson & Forsgren, 1996; Forsgren et al., 2005; Forsgren, 2008), agency theory (O'Donnell, 2000; Roth & O'Donnell, 1996), institutional theory (DiMaggio & Powell, 1983; Oliver, 1997), the perspective on the headquarters' role in MNE networks (Ciabuschi et al., 2011; Ciabuschi et al., 2012), and information-processing theory (Egelhoff, 1982, 1993; Galbraith, 1973, 1977). According to Brooke (1984: 9), autonomy refers to "one in which units and sub-units possesses the ability to take decisions for themselves on issues which are reserved to a higher level in a comparable organization". In line with this definition, we argue that decision-making autonomy of a subsidiary can be assessed by the perception of the manager of the sub-unit. Hence, in this thesis subsidiary decision-making autonomy is assessed and measured by the perception of subsidiary managers at the subsidiary side.

As discussed previously, the relationships between country contexts and decision-making autonomy, and the role of decision-making autonomy in subsidiary innovation have not been explicitly explored in both theoretical and empirical studies of subsidiary operations. These research gaps are addressed by using and extending specific theoretical frameworks building upon institutional theory (Chapter 3), business network theory and agency theory (Chapter 4), the perspective focusing on the importance of headquarters' role in subsidiary operations (Chapter 5), and business network theory (Chapter 6). Institutional theory offers a valuable insight on the role of isomorphism: it explains the level of subsidiary decision-making autonomy when a subsidiary operates in and belongs to different institutional environments. It also helps to assess the level of decision-making autonomy subsidiary needed for the purpose of local responsiveness. Next to this, business network

theory captures subsidiary decision-making autonomy by looking at how the relationship between headquarters and subsidiary matters when subsidiaries engage in specific business networks, both inside the MNE network and externally. Solving agency problems emanating from information asymmetry between headquarters and subsidiaries through subsidiary decision-making autonomy is the approach of agency theory. The perspective centering on the role of headquarters in subsidiary innovation emphasizes the importance of headquarters knowledge and its understanding of subsidiary operations. Together with business network theory, the theoretical perspective of the headquarters view explains what role decision-making autonomy plays in understanding subsidiary innovation. The aforementioned theories each helps to understand the causes and consequences of subsidiary decision-making autonomy. The overall structure of this thesis is presented in Figure 1.1.

Figure 1.1. Structure of the thesis



Our research is embedded in subsidiary decision-making autonomy research that is reviewed in Chapter 2. Chapter 3 captures the effect of home- and host country institutional environments on subsidiary decision-making autonomy. This chapter appeared in the *Problems and Perspectives in Management* (de Jong & Dut, 2010). The impact of distance between home and host countries on subsidiary decision-making autonomy is disclosed in

Chapter 4, which was presented at the 12th annual conference of European Academy of Management 2012 Erasmus University, Rotterdam, the Netherlands. Chapter 5 focuses on subsidiary decision-making autonomy and subsidiary innovation. This chapter was presented at the 38th annual conference of the European International Business Academy 2012 University of Sussex, Brighton, the United Kingdom, and the 55th annual conference of the Academy of International Business 2013, Istanbul, Turkey. Finally, Chapter 6 captures the relationship between subsidiary decision-making autonomy, subsidiary embeddedness and subsidiary innovation. This chapter was also presented at the 55th annual conference of the Academy of International Business 2013, Istanbul, Turkey.

1.3. The scope of this study

The empirical studies presented in this thesis use different data sources. The first empirical study in Chapter 3 uses secondary data-sources (that is, the Orbis database) to collect information for a sample of subsidiary companies and their institutional environments. Using Orbis, we collected data for subsidiaries of eighteen MNEs in twenty-five European countries. Although the secondary data derived from the Orbis database are valuable, the Oribis database does not include a direct measure of subsidiary decision-making autonomy. In addition, secondary data do not provide detailed information concerning subsidiary innovation and local embeddedness. For these reasons, we used survey data in the subsequent empirical studies. The survey data come from the Institute for Economic Research Halle (IWH) and contain information on subsidiaries from a set of five European countries. The survey was held in 2011 (see for more detail Chapters 4, 5, and 6). Our research has directly contributed to the IWH data collection process, by developing questions that directly measure decision-making autonomy of subsidiaries. Based on our research, IWH has fine-tuned the questions used to measure subsidiary decision-making autonomy. Previously IWH used questions that measure the scope of business activities by measuring business functions. This scope measure of decision-making autonomy is well established in the literature (see Chapter 2). From 2011 onwards, IWH uses a direct measure of subsidiary decision-making autonomy asking respondents to indicate who takes decisions

on certain business activities rather than whether certain business functions were performed. This revised measure of decision making autonomy is a reflection of the progress of the field as a whole. As chapter 2 shows, empirical studies on subsidiary autonomy have relied on both measures of business functions and direct measures of decision making. Over time, the more direct measures of decision making have come to dominate. This thesis uses both measures of subsidiary decision-making autonomy. We use a measure of decision-making autonomy based on business functions in Chapter 3, and a measure based on decision-making in Chapters 4, 5, and 6.

In Chapters 4, 5, and 6, the 2011 survey of the IWH FDI micro database is used. This database offers the opportunity to focus on Central and Eastern European (CEE) countries. This context is important for this thesis. Since the early 1990s, the CEE countries – in this thesis: the Czech Republic, Hungary, Romania, Poland, and the Slovak Republic that are covered in the IWH databases – have been characterized by institutional change from a planned to a market economy. This process entailed policies targeted at privatization, liberalization and macroeconomic stabilization (Gabrisch & Hölscher, 2006). Post-communist countries also quickly integrated with the global world, and in particular the West European economy, via international trade and foreign direct investments. This process was influenced significantly by MNEs with regard to firm restructuring (Djankov & Murrell, 2002), private enterprise R&D (Kalotay & Hunya, 2000; UNCTAD, 2005), export competitiveness (Rugraff, 2006; UNCTAD, 2002), and productivity growth (Jindra, 2006; Schadler et al., 2006). Differences in the development of individual transition economies are largely explained by initial conditions, macroeconomic policies and structural reforms (Berg et al., 1999).

MNEs from all over the world enter in these markets using different entry modes and applying diverse patterns of ownership and control (Jindra et al., 2009). It results in different parent-affiliate relationships. Differences in the relationships between parent firms and subsidiaries operating in the transition economies are subject of ongoing debate. In this context, subsidiary decision-making autonomy has been described as an issue of profound tension between the two parties (Asakawa, 2001; Birkinshaw et al., 2000). The reason is that the relationship can be modeled as a "mixed motive dyad" in which the interests and

perceptions of the two parties are frequently not aligned with one another (Ghoshal & Nohria, 1989). Where the subsidiary desires decision-making autonomy, headquarters prefers to control; where subsidiary managers see entrepreneurial endeavor, headquarters sees opportunism. And where the subsidiary is acting primarily in the interests of the local business, headquarters is far more concerned about the MNE's worldwide profitability (Birkinshaw et al., 2000). Consequently, the causes and consequences of decision-making autonomy are of particular importance to fully comprehend the potential for development of foreign subsidiaries in this part of the world.

1.4. Contributions and theoretical implications

The contributions of this thesis to the international business and management literature embody both theoretical insights and empirical findings. First, we contribute to institutional theory in Chapter 3 by developing theoretical arguments that explain how different home- and host country institutional environments determine the decision-making autonomy of subsidiaries. In particular, we enhance the theoretical understanding of how the production regimes of a home country's advanced economies, i.e. "coordinated market economies" (CMEs) and "liberal market economies" (LMEs) affect subsidiary's decision-making autonomy. Similarly, this classification of national regimes is applied to host countries, that is, whether there are differences in subsidiary decision-making autonomy between CMEs and LMEs in host countries.

Second, Chapter 4 contributes to business network theory and agency theory. We develop a theoretical framework that shows whether and how distance between home and host countries determines subsidiary decision-making autonomy. The theoretical model presented in Chapter 4 provides an important contribution to existing business network theory (Andersson & Forsgren, 1996; Forsgren et al., 2005; Forsgren, 2008) and agency theory (O'Donnell, 2000; Roth & O'Donnell, 1996).

Third, Chapter 5 presents two different predictions regarding the nature of the relationship between subsidiary decision-making autonomy and subsidiary innovation. We offer a theoretical contribution to the innovation literature at subsidiary level by specifying a

theoretical model that specifies the relationship between subsidiary decision-making autonomy and subsidiary innovation. We develop theoretical argumentations to support a non-linear U-shaped relationship between decision-making autonomy and subsidiary innovation. These theoretical arguments for the autonomy-innovation relationship presented in Chapter 5 provide new insights to existing business network theory and the perspective focusing on the headquarters' role in innovation at subsidiary level.

Fourth, in Chapter 6 we provide a theoretical contribution to the literature by studying the relationship between subsidiary innovation and two types of relationships. That is, we follow the suggestion of Yamin and Anderson (2011) that internal and external relationships of a subsidiary have different origins (Meyer et al., 2011) and relate each of these to subsidiary decision-making autonomy. In addition, we develop theoretical arguments capturing the intricate relationship between subsidiary decision-making autonomy, subsidiary embeddedness and subsidiary innovation.

The theoretical contributions are complemented with empirical findings reported in this thesis based on the 2007 Orbis database and the 2011 IWH survey database. The empirical contributions of this thesis are as follows. First, the findings in Chapter 3 report that home and host institutional environments affect a subsidiary's decision-making autonomy. That is, the subsidiary's decision-making autonomy is strongly associated with home- and host country institutional environments, such that subsidiary decision making autonomy is higher in coordinated market economies. Second, a fine-grained analysis of distance in Chapter 4 shows that a higher cultural, geographic and economic distance is associated with lower levels of decision-making autonomy of subsidiaries. Third, the results in Chapter 5 indicate a non-linear U-shaped relationship between subsidiary decision-making autonomy and innovation intensity of a subsidiary. This result suggests that increasing levels of decision-making autonomy first lead to lower levels of subsidiary innovation and after a certain level to higher levels of subsidiary innovation. Fourth, the results in Chapter 6 show that the impact of subsidiary decision-making autonomy on subsidiary innovation (as shown in Chapter 5) is contingent on the degree of subsidiary external embeddedness. Taken together, the empirical findings reported in this thesis

increase our understanding of the causes and consequences of subsidiary decision-making autonomy in international business and management research.

The theoretical contributions and empirical findings of this thesis have important implications. First, the results in Chapter 3 emphasize that the home- and host country institutional environments in combination with parent-company and subsidiary characteristics simultaneously determine the decision-making autonomy of subsidiaries. This implies that although individual characteristics have been addressed elsewhere, our study is among the first that explicitly focuses on the institutional environment and that offers an integrative perspective of subsidiary decision-making autonomy. In particular, it suggests that home- and host country institutional environments co-determine the overall strategy of MNEs including to what extent MNEs apply decentralizing or centralizing strategies to their foreign subsidiaries. This implication complements the existing arguments of institutional theory with respect to MNE organization.

Second, in Chapter 4 we find that distance between home and host countries has a negative effect on a subsidiary's decision-making autonomy. The negative distance role fits the prediction of agency theory. The results imply that a larger distance to the host country can be associated with the need to be locally responsive (as business network theory suggests) for which high levels of subsidiary decision-making autonomy are required. The fact that we find a negative association implies that multinationals respond differently to distance. This does however not exclude the possibility that for certain processes for which local embeddedness is required – for example subsidiaries focusing on innovation – it would be beneficial for the multinational to have subsidiaries with high levels of decision-making autonomy, even when faced with increased distances between home and host countries.

Third, the empirical findings in Chapter 5 show that there is a non-linear U-shaped relationship between decision-making autonomy and subsidiary autonomy. This result implies that higher levels of subsidiary innovation are associated with either a situation in which subsidiaries have relatively high levels of decision-making autonomy or almost no decision-making autonomy (i.e. full control by headquarters). This implication fits both business network theory and the complementary perspective centering on the function of headquarters.

Fourth, the empirical findings in Chapter 6 imply that the non-linear association between subsidiary decision-making autonomy and subsidiary innovation is contingent on the level of external embeddedness. That is, the non-linear U shaped relationship between subsidiary innovation and subsidiary decision-making autonomy becomes more pronounced at higher levels of external embeddedness. A key theoretical implication of this chapter is that a fine-grained contingency perspective is needed to understand the precise role of subsidiary decision-making autonomy in situations where subsidiary innovation and subsidiary external embeddedness matter.

1.5. Managerial implications

This thesis provides a series of managerial implications for subsidiary and headquarters managers. First, our empirical results clearly show that the level of decision-making autonomy of each subsidiary may be different depending on home- and host country institutional environments, and the distance between home- and host countries. That is, subsidiaries belonging to CME MNEs and operating in CMEs have a higher level of decision-making autonomy for the purpose of implementing and ensuring parent firm's global strategy. A subsidiary with larger cultural, geographic and economic distance from the home country has a lower level of decision-making autonomy for the purpose of reducing information asymmetry between headquarters and subsidiaries. Understanding these fundamental differences may help subsidiary managers to reduce and prevent potential tension between headquarters and subsidiaries.

Second, our empirical results indicate that the relationship between the level of decision-making autonomy and subsidiary innovation is complex as it also depends on external embeddedness. A higher level of decision-making autonomy is not always best for the innovation process. The positive effect of both the lowest and highest level of decision-making autonomy on subsidiary innovation is higher only when external embeddedness is important. Understanding this helps subsidiary and headquarters managers in designing strategies to obtain the optimal level of subsidiary innovation, and thus enhance the subsidiary's competitive advantages. Subsidiary managers may have an incentive to

decentralize decision making as this increases their absolute and relative power within the MNE network. However, headquarters managers may have the opposite incentive. The risk is that MNEs will end up with medium levels of decision-making autonomy in subsidiaries as an attempt to satisfy both groups of managers. Our results suggest that this is the worst possible outcome (especially when external embeddedness is high). To reduce the potential tension between headquarters and subsidiary managers both need to be aware that they have to arrive at an *appropriate* level of decision-making autonomy for subsidiaries to be charged with specific roles in countries with different country institutional environments and at different country distances. The insights generated in this thesis help to increase this understanding: it helps headquarters managers to design appropriate governance structures and strategies, which reduce the autonomy-control tension inherent in many the relationships between headquarters and subsidiaries.

1.6. Empirical regularities

In closing we would like to mention that taken together, Chapters 3, 4, 5 and 6 in this thesis provide "empirical regularities". The overall conclusion from our research is that MNEs face a trade-off: when distance to the host country increases it is likely that the headquarters relies/needs to rely on the subsidiary for local expertise and knowledge, especially in institutionally thick countries where local embeddedness is important (Chapter 3) but with increasing distance the degree of decision-making autonomy will go down (Chapter 4), whereas to increase innovation both low or high levels of subsidiary decision-making autonomy are actually best (Chapter 5), especially when subsidiary's external embeddedness is high (Chapter 6). This overall conclusion is a reflection of a well-known tension in the corporate reality of international business and management, namely how to balance local responsiveness with global coordination and integration. Despite the already acknowledged limitations of this study, we are confident that this thesis provides novel insights on how subsidiary decision- making plays a pivotal role in understanding this tension and formulating an appropriate response to it.

Chapter 2

Subsidiary decision-making autonomy: Overview

2.1. Introduction

Rapid changes in the nature of global competition have caused international managers and management researchers to search for new ways to frame problems and answer questions about how to manage multinational enterprises (MNEs) effectively (O'Donnell, 2000). Several authors have pointed out that the subsidiary is playing an increasingly important role in generating competitive advantage for the MNE (Edwards et al., 2002; Gammelgaard et al., 2012a, b; Takeuchi et al., 2008). However, ambivalence in headquarters-subsidiary relationships frequently arises since the subsidiary requires a degree of decision-making autonomy that the parent is not always disposed to concede (Johnston & Menguc, 2007). Subsidiary decision-making autonomy has been identified as one of the critical contemporary issues for researchers and managers (Young & Tavares, 2004), and a thorough understanding of the determinants and consequences of subsidiary decision-making autonomy has become pivotal to both practitioners and management scholars. Several different explanations are displayed for these statements. First, the degree of subsidiary decision-making autonomy is a key reflection of the overall organizational structure of subsidiaries as well as power-dependence structures between headquarters and subsidiaries (Asakawa, 2001; Bartlett & Ghoshal, 1989; Preffer & Salancik, 1978). Second, decision-making autonomy is a key feature of the value system and incentive structure for effectively doing research and development (Asakawa, 1996, 2001; Brooke,

1984), and provides a platform for establishing initiatives of the subsidiary (Birkinshaw, 1997; Birkinshaw et al., 1998; Mudambi, 2011). These important characteristics reflect a control–autonomy tension in the relationship between headquarters and subsidiary (Asakawa, 2001).

In this chapter we review theories and previous empirical studies explaining (a) the determinants and (b) consequences of subsidiary decision-making autonomy. Although a broad literature exists on autonomy in general (e.g. autonomy research on self-managing teams, or autonomy research on individuals), we focus here on autonomy in the context of subsidiaries and multinational firms. Our approach is twofold. First, a variety of theoretical perspectives has been applied to examine the determinants and consequences of subsidiary decision-making autonomy. We identify theoretical frameworks that have been used to explain the determinants and consequences of decision-making autonomy. These are the integration-responsiveness framework, resource dependence theory, agency theory, institutional theory, business network theory, the perspective centering on the role of headquarters in subsidiary operation, and information-processing theory. Second, we undertake a comprehensive review of empirical studies explaining the causes and consequences of differences in the level of subsidiary decision-making autonomy.

We take a systematic approach to reviewing relevant theoretical and empirical studies, selecting articles by accessing the particular content of each issue in the leading journals in the fields of international management, strategy and international business. We focus on highly-ranked journals publishing research on subsidiaries and MNEs: *Journal of Management, Journal of Management Studies, Journal of Word Business, Journal of Business Research, Management Science, Administrative Science Quarterly, Journal of International Management, International Business Review, Journal of International Business Studies, Strategic Management Journal, Academy of Management Review, Academy of Management Journal and Management International Review.* We accessed all issues of these journals in the period from January, 2000 to June, 2013. The key words included subsidiary decision-making autonomy, subsidiary centralization/decentralization, decision-making autonomy, autonomy, decision-making authority, control, multinational, MNE, and subsidiary. We cross-validated our search results by checking other references of the journals ("snowballing effect") and with a

keyword search for monographs and PhD theses in both Picarta and EBSCO Host. Our search yielded a large number of theoretical contributions and a more limited set of eighteen large scale empirical studies focusing on the determinants of subsidiary decision-making autonomy, and thirteen studies focusing on the consequences of subsidiary decision making autonomy.

Through the literature search and by identifying the common characteristics of variables, we group the determinants of decision-making autonomy in five clusters. Those groups relate to the strategic role of the subsidiary (13 of the 18 studies), organizational complexity (16 of the 18 studies), decision- and control structure (11 of the 18 studies), general MNE characteristics (14 of the 18 studies), and industry- and country- level features (13 of the 18 studies). The results are generally consistent with theoretical predictions. Most of these studies focus on one particular level of analysis (e.g. subsidiary or multinational), a few studies pay attention to a combination of levels of analyses. Surprisingly, the role of home and host country context as a main effect on subsidiary decision-making autonomy is underexplored. The thirteen empirical studies relating subsidiary decision-making autonomy to outcomes use subsidiary decision-making autonomy as an independent variable or a moderating variable to explain how decision-making autonomy affects, for example, the performance of a subsidiary (Ciabuschi & Martín 2011; Gammelgaard et al., 2012a), entry mode of MNE (Slangen & Hennart, 2008; Slangen, 2011), local linkages of subsidiary (Giroud et al., 2012; Jindra et al., 2009) and knowledge transfer within MNE network (Rabbiosi, 2011). The results of the thirteen empirical studies are generally in line with the theoretical predictions. Our literature search also revealed that – despite the recent interest in knowledge generation and innovation in subsidiaries - little attention has been paid to the subsidiary decision-making autonomy when explaining subsidiary innovation as well as its role in tapping external knowledge for enhancing innovation at subsidiary level.

The remainder of this chapter focuses on definitions of subsidiary decision-making autonomy and why subsidiary decision making autonomy matters. We identify and discuss the most important theories used in subsidiary decision-making autonomy research. We focus on determinants and consequences of subsidiary decision-making autonomy. Our review and the critical assessments of the empirical studies will lead us to identify several

research gaps. At the end of this chapter, we provide a conclusion and delineate a research program with specific research questions that will be answered in the subsequent chapters (3, 4, 5 and 6) of this thesis.

2.2. Definitions of subsidiary decision-making autonomy and why it matters

When discussing the different theories used to explain the determinants and consequences of subsidiary decision-making autonomy, it is pivotal to first define subsidiary decision-making autonomy. According to Brooke (1984: 9) decision-making autonomy refers to an organization "in which units and sub-units possess the ability to take decisions for themselves on issues which are reserved to a higher level in comparable organizations". O'Donnell (2000: 528) states that decision-making autonomy is "the degree to which the foreign subsidiary of the MNEs has strategic and operational decision-making authority". Young and Tavares (2004: 228) relate subsidiary decision-making autonomy to the constrained freedom or independence available to or acquired by a subsidiary, which enables it to take certain decisions on its own behalf. Taggart (1997) proposes that "autonomy may be regarded as a decision-based process that evolves through bargaining between centre and periphery in an organization". Hence, irrespective of the foci of the studies, subsidiary decision-making autonomy in general refers to "the degree to which an MNE subunit may make significant decisions, referring to the whole spectrum of inter-and intra-firm relationships, with or without the consent of the headquarters" (Manolopoulos, 2006: 49).

Although several definitions have been suggested, their nature and characteristics are not exclusive and opposite. For that reason, this thesis will use the definition of O'Donnell (2000) as an important departure point for empirical studies in the chapters to follow. Hence, we define subsidiary decision-making autonomy as: "the extent to which the subsidiary managers are able to make decisions without headquarters' involvement". Moreover, decision-making autonomy equals to "decision-making authority", or "decentralization" (Brooke, 1984). The latter implies a comparison with centralization (Brooke, 1984), and hence

decentralization is an inverse of centralization (Luo, 2006). Gupta and Govindarajan (1991: 785) refer to decentralization as "the extent of decision-making authority that is delegated to the general manager of a subsidiary by corporate superiors". Centralization is used when decision-making is biased towards the top. To be consistent and relevant for the "subsidiary" context we use the term – "subsidiary decision-making autonomy" in this thesis. It is the equivalent of decentralization meaning that subsidiary managers have a "right" to make decisions relating to business activities at the subsidiary without the involvement of their headquarters.

As our definition of subsidiary decision-making autonomy already indicates, subsidiary decision-making autonomy is important to understand the headquarters-subsidiary relationship. Our theoretical overview will show that a variety of reasons exists why subsidiary decision-making autonomy matters and is worth further study. First, subsidiary decision-making autonomy is a key reflection of the overall organizational structure of subsidiaries and current power-dependence structures between headquarters and subsidiaries (Asakawa, 2001; Preffer & Salancik, 1978) as well as intra-organizational management of MNE network (Bartlett & Ghoshal, 1989). Second, decision-making autonomy is a key feature of the value system and incentive structure for effectively doing research and development (Asakawa, 1996, 2001; Brooke, 1984), and provides a platform for establishing initiatives of the subsidiary (Birkinshaw, 1997; Birkinshaw et al., 1998; Mudambi, 2011). Third, decision-making autonomy strengthens the diffusion of knowledge within the MNE (Chiao & Ying, 2013), encourages subsidiaries to contribute to research and development and innovation creation (Ghoshal & Bartlett, 1988) leading to further knowledge flows (Gupta & Govindarajan, 1991), and facilitating the interactions among subsidiaries (Ambos et al., 2011). Subsidiary decision making autonomy not only has positive effects. Decision-making autonomy may hinder coherent innovation strategy as a multinational (Asakawa, 2001), because of a lack of integration in the MNE network (Birkinshaw et al., 1998). Moreover, decision-making autonomy reduces the possibility of the recombination of technological knowledge resources available from both home headquarters and other subsidiaries in other host countries (Edstrom & Galbraith, 1977; Fang et al., 2010; Gammelgaard et al., 2012b). Taken together, we conclude that decision-making autonomy

plays an important role in the headquarters-subsidiary relationship. It affects the operations of both MNE and subsidiary, and affects the performance of the subsidiary and in the end also the competitive position of the MNE as a whole.

Having defined decision-making autonomy and having argued how it matters for subsidiary and MNE, it is time to turn to the drivers of differences in decision-making autonomy and its consequences. In the remainder of this chapter we review the literature on the determinants and consequences of subsidiary decision making autonomy. We identify seven theories that are frequently used in the context of subsidiary decision-making autonomy. Note that these seven theories are not 100 percent mutually exclusive, and that the arguments put forward in the specific theories are often related. Despite the overlap, the core of the argument is different, which explains why we can distinguish between these seven theoretical frameworks. The seven theories are the integration-responsiveness framework, resource dependence theory, agency theory, institutional theory, business network theory, the perspective centering on the role and the function of headquarters in subsidiary operation (also called the headquarters view), and information-processing theory.

2.3. Theoretical perspectives

2.3.1. Integration-responsiveness framework

A commonly used framework to understand the degree of decision-making autonomy of subsidiaries has been developed by Prahalad and Doz (1987) and focuses on integration (i.e., the centralized management of geographically dispersed activities on an ongoing basis) and local responsiveness (i.e., resource commitment decisions taken autonomously by a subsidiary in response to primarily local competitive or customer demands). Jarillo and Martinez (1990) have extended the original framework by using the degree of localization (i.e., whether the extent of activities such as R&D and purchasing are performed in the host country) and the degree of integration (ranging from “very autonomous” to “highly integrated”). Their study has three important characteristics. First, it demonstrates the value of integration and decision-making autonomy as analytical variables. Second, it

characterizes the strategic role of each subsidiary type in their framework. Third, it identifies autonomous strategy (a subsidiary taking a position that is relatively independent of its parent organization) as occupying an important node in examining subsidiary decision-making autonomy. This framework's main prediction is that the subsidiary's level of integration within the MNE network is negatively associated with subsidiary decision-making autonomy. This is because subsidiaries operating in a host country face several pressures from the local market, e.g., differences in customer preferences or host government. Thus, the lower the level of the subsidiary's integration, the lower the global interdependence is. The higher the local market embeddedness, the more local managers require decision-making autonomy to meet these distinctive local market requirements.

Next to local market pressure, a parent company may grant more decision-making autonomy to more competent subsidiaries. Simões et al. (2002) as well as Taggart and Hood (1999) argue that competent subsidiaries that possess local knowledge can respond quickly to local market forces and pick-up market signals, which is associated with higher levels of independence (cf. Bartlett & Ghoshal, 1986; 1989). This especially holds for knowledge-seeking investments in which subsidiaries are part of a knowledge augmenting strategy. This is related to the argument that in high-technology industries, embeddedness in the form of close relationships with local suppliers or customers can be expected to play a more important role than in low-technology industries (Gates & Egelhoff, 1986; Männik et al., 2005), leading to higher levels of subsidiary decision-making autonomy in the former.

2.3.2. Resource dependence theory

Resource dependence theory, stemming from the resource-based view (Barney, 1991; Wernerfelt, 1984), proposes that the power of an organization depends on the resource dependency relationships it has with other organizations. If a focal organization is highly dependent upon another organization for an important resource, that other organization will have power over the focal organization (Medcof, 2001; Pfeffer & Salancik, 1978). Applied to MNEs, research has found that when a subsidiary remains small and depends on a headquarters for resources, the headquarters has substantial control over the subsidiary

(Preffer, 1981). Doz and Prahalad (1981) report that "as subsidiaries mature and become autonomous with respect to strategic resources, [...] the headquarters' ability to control the strategies of subsidiaries is substantially reduced" (Prahalad & Doz, 1981: 5). In addition, subsidiaries become the gateway to external counterparts for headquarters, which generally lacks such direct external linkages with communities in a foreign environment. Usually R&D subsidiaries play the role of a knowledge broker, bridging gaps between their headquarters and the external community. Such a central position fosters the subsidiary's power and decision-making autonomy (Ambos et al., 2011). Several other studies have also indicated that when a local subsidiary holds important resources that are neither substitutable nor obtainable through a third party, it enjoys power over other units that are in need of that resource (Ambos & Schlegelmilch, 2007; Medcof, 2001).

Eventually, the main prediction of resource dependence theory is that the degree of central control over subsidiaries is conditioned by the mutual dependency of resources that headquarters and subsidiaries provide to each other. As resource levels of the subsidiary increase, interests with headquarters may diverge. As a result, dependency on the subsidiary may increase. Decentralization will be more where local resources are high. This implies that as the subsidiary matures and grows, it develops increasingly heterogeneous sets of relationships with other organizations and intra-firm units (Pfeffer & Salancik, 1978) and becomes autonomous with regard to its most needed resources (Blau, 1964; Kumar & Seth, 1998; Prahalad & Doz, 1981).

A crucial resource affecting subsidiary decision-making autonomy is knowledge that enables subsidiaries to conceive of and implement value-creating strategies that improve its effectiveness and efficiency (Barney, 1991; Daft, 1983). Gupta and Govindarajan (1991) as well as Rabbiosi (2011) argue that flows of knowledge between the subsidiary and the rest of the MNE network would recognize the subsidiary's decision-making autonomy. The distinctive resources and capabilities of subsidiaries provide other subunits with the opportunities to identify and implement independent productive roles. Subsidiaries with considerable knowledge in- and outputs are more independent and autonomous and therefore subject to less control from the headquarters. Subsidiaries whose current commercial success relies upon knowledge and technology provided by the parent's

technological platform and operational procedures are more managed through bureaucratic monitoring mechanisms which decrease their decision-making autonomy.

Several studies (e.g., Gates & Egelhoff, 1986; Johnston & Menguc, 2007) have used resource dependence theory to argue that when the (relative) size of a subsidiary is large, its bargaining position will be better. Subsidiary size in an absolute sense has the ability to support a full management staff, thus leading to more decentralization of decision-making because of its bargaining strength. Although larger size implies that the subsidiary can develop its own resources and become less dependent on central management, a very large subsidiary is likely of great importance to the overall company, and may therefore require much attention from parent firm (Hedlund, 1981). Large size is, however, also associated with increased coordination complexity. The increased information flows and the ensuring expansion in volume and complexity of decision-making require increasing managerial input from the parent. This in turn brings about increased headquarters influence (Shen, 1970). Taken together, the impact of subsidiary size on decision-making autonomy is often predicted to be non-linear.

Similar to the integration-responsiveness framework, resources related to knowledge and technology also play a key role in resource dependence theory. The causal argument that links such resources with the degree of subsidiary decision-making autonomy is different however. In the integration- responsiveness framework it is based on external embeddedness. In resource dependence theory, it is based on internal considerations. Nonetheless, there is a comment element in the two perspectives. Birkinshaw and Hood (2000) argue that subsidiaries established in leading-edge clusters will develop relationships with local customers and suppliers, experiment with new ideas, and transfer some of their new knowledge back home. To do any of these requires a significant level of decision-making autonomy as predicted by the integration-responsiveness framework. In addition, once some level of self-determination has been achieved, the subsidiary finds itself in a more powerful position vis-a-vis its parent company since it is in control of valuable local resources (Pfeffer & Salancik, 1978; Prahalad & Doz, 1981). This offers even greater degrees of freedom, and thus the possibility to further enhance its local embeddedness as predicted by resource dependence theory.

2.3.3. Agency theory

The third theoretical perspective is agency theory that studies how information asymmetry affects economic decisions (Akerlof, 1970; Stigler, 1961). Agency theory postulates that monitoring is more difficult when the relationship between the agent and the principal is increasingly characterized by information asymmetry (Rajagopalan & Finkelstein, 1992; Tosi & Gomez-Mejia, 1989). This theory has also been applied to the analysis of the headquarters-subsidiary relationship (Andersson & Holm, 2010). This means that the headquarters delegates work on behalf of subsidiary and implements formal and informal control mechanisms to ensure that the subsidiary pursues the goals of the headquarters (O'Donnell, 2000). Factors that increase information asymmetry between the headquarters and the subsidiary as well as increased discretion on the part of subsidiary managers should diminish the effectiveness of monitoring by headquarters.

An agency problem essentially exists when subsidiary managers make decisions that are not desired by headquarters as a result of the information asymmetry and the incongruence between the goals of headquarters and the subsidiary (O'Donnell, 2000; Roth & O'Donnell, 1996). It is argued that the information asymmetry and goal incongruence can be driven by the lateral centralization of value added activities and a cultural difference between headquarters and subsidiary markets. The later implies that distance between home and host countries is likely to increase the agency problem in the headquarters-subsidiary relationship (Chang & Taylor, 1999). To solve the agency problem, the headquarters can use monitoring, that is, supervise the behavior of the subsidiary, which limits the ability of the subsidiary to engage in self-interested behavior (Andersson & Holm, 2010; O'Donnell, 2000). In this reasoning, a higher distance between home and host countries increases agency problems, and leads to lower levels of decision making autonomy, a hypothesis we test in Chapter 4.

2.3.4. Institutional theory

A fourth perspective is institutional theory that focuses on the role of isomorphism. In order to survive, firms need to obtain legitimacy and do so through isomorphism with salient institutions. That is, they tend to conform to the rules, norms and belief systems prevailing in their environment (DiMaggio & Powell, 1983) – a process also referred to as normative rationality (Oliver, 1997). Scholars applying this theory have argued that subsidiaries experience conformity pressures from both their internal (parent) and external (host country) environments. This means that they experience pressures for global integration to achieve internal consistency on the one hand and a need for a local orientation to achieve local external legitimacy on the other hand (Kostova, 1999; Kostova & Zaheer, 1999; Rosenzweig & Singh, 1991). Although this theory is close to the integration-responsiveness framework, the key difference is that the reason for being locally responsive in institutional theory is the need to adapt to local circumstances for legitimacy reasons.

The above argument has been applied by Fenton-O'Creevy et al. (2008). They use Hall and Soskice (2001)'s distinction concerning different institutional systems and the subsequent impact on firms. According to Hall and Soskice, the production regimes of advanced economies can be classified into two main patterns, namely "coordinated market economies" (CMEs) and "liberal market economies" (LMEs). Firms operating in the former are regarded as significantly more institutionally constrained than those that operate in the latter because they operate within contexts whose legal frameworks and systems of industrial relations constrain managers' decision-making autonomy in applying market-driven or technologically contingent management practices. Thus it has been argued that subsidiaries in CME countries are more institutionally constrained than subsidiaries in LME countries (Fenton-O'Creevy et al., 2008). As a result it can be expected that higher levels of decision-making autonomy are granted to subsidiaries in institutionally "thick" countries, like CMEs, a hypothesis we will test in the next chapter.

2.3.5. Business network theory

Business network theory assumes that business networks exist both within the subsidiary and outside of it. This implies that the business network extends around every subsidiary that engages in business activities, and that each subsidiary differs in terms of its history, quality, and level of embeddedness inside and outside to the MNE group (Forsgren et al., 2005; Forsgren, 2008). The key argument is that subsidiaries are highly embedded in their local business networks, which make the MNE "distributed" when it comes to knowledge and control. In this view, the headquarters is always an outsider vis-à-vis the business networks in which the subsidiaries are embedded (Ciabuschi et al., 2011a; Forsgren & Holm, 2010). This creates a continuing divergence between the existing knowledge areas of the headquarters and the subsidiary (Andersson et al., 2007; Ciabuschi et al., 2011a; Forsgren et al., 2005). These standpoints mean that a subsidiary's embeddedness in external relationships decreases the headquarters' possibility to influence the subsidiary's day-to-day activities. This is associated with relatively high levels of the subsidiary's decision-making autonomy, which enhances its ability to understand local business environment (Andersson & Forsgren, 2000; Birkinshaw et al., 1998), and to obtain local business legitimacy (Bartlett & Ghoshal, 1989; Prahalad & Doz, 1987). As a result, the subsidiary can actively obtain new knowledge and ideas needed to explore new opportunities that foster its innovation potential and outcome (Ambos et al., 2011). Business network theory relates to both the causes and the consequences of subsidiary decision-making autonomy. It acknowledges that the headquarters is a separate unit with regard to the business networks in which subsidiaries are involved. The headquarters lacks knowledge about subsidiary's operations, and this deficiency can be dealt with by way of decentralization (and a higher level of decision-making autonomy). This theory also proposes that high levels of decision-making autonomy enables subsidiaries to increase their ability to absorb external knowledge, which benefits for innovative activities at the subsidiary level, a hypothesis we test in Chapter 5.

2.3.6. The headquarters view: the role and function of headquarters

The sixth perspective relates to the role and the function of headquarters in subsidiary operations and is recently stressed in the current literature (see Ciabuschi et al., 2011a; Ciabuschi et al., 2012; Forsgren & Holm, 2010). This perspective assumes that the headquarters has a reasonable possibility of controlling value-creation processes at the subsidiary level through various control mechanisms. Headquarters has been described as the unit responsible for the long-term strategic planning of the MNE and for administration and monitoring (Chandler, 1991; Ciabuschi et al., 2012). The headquarters plays a crucial role as a controller and coordinator of various innovation processes within MNE. The reason is that even though the headquarters has constrained knowledge of the subsidiary operations (as business network view and integration-responsiveness theory suggest), it still has a reasonable understanding of what kind of knowledge it lacks and of how to organize the subsidiary's operations. Based on this understanding, the headquarters can choose which innovation processes to support for subsidiaries. It is also able to access to what extent the subsidiary possesses valuable expertise for the innovation project and finds ways of intervening that will guarantee the proper application of its knowledge at the subsidiary level (Ciabuschi et al., 2012; Forsgren & Holm, 2010). Eventually, this perspective predicts that the lower the level of subsidiary decision-making autonomy, the higher the level of subsidiary innovation is, an argument we return to in Chapters 5 and 6. In short, the perspective on the role and the function of headquarters addresses the crucial importance of headquarters involvement in innovation processes at the subsidiary level. This perspective shows that to obtain the optimal level of subsidiary innovation the involvement of headquarters has to increase (and the lower the level of subsidiary decision-making autonomy).

2.3.7. Information-processing theory

Information-processing theory argues that the impact on an organization of its strategy and the environmental factors with which it chooses to deal can be expressed in terms of the

information-processing requirements they create (Egelhoff, 1982, 1993; Galbraith, 1973, 1977). The potential of the organization to confront these requirements can be expressed in the terms of information-processing capacities furnished by its organizational design. The organization's design affects the information-processing requirements of the organization (Egelhoff, 1993). These include technology, size, environmental change, environmental complexity, subunit interdependency, and goals. Similarly, the features of an organization's design, such as structure, degree of centralization, planning and control systems, interpersonal communication patterns, must be measured or expressed in terms of the information-processing capacity they provide.

Several scholars have used information-processing theory to argue that subsidiary decision-making autonomy is likely to be affected by several components of global diversification, organization features (Vachani, 1999), or of environmental and organizational conditions (Luo, 2006). For example, MNEs with higher related international geographic diversification can create opportunities for benefits from economies of scale, "spillover" effects such as those in advertising (Daniels & Radebaugh, 1998), or lower costs of technology transfer within a region (Vachani, 1999). Such companies have an opportunity to reduce coordination cost made possible by physical and cultural proximity among a group of countries and by similarities in their level of economic development (Grant, 1987). Companies that choose to take advantage of this opportunity to reduce coordination costs will probably find it easier to do so by decentralizing decision-making, since subsidiaries are more likely to have the information necessary for taking advantage of regional synergy (Vachani, 1999).

2.3.8. In conclusion

We have described several relevant theories that have been used to explain the determinants and the consequences of subsidiary decision-making autonomy. Many of these theoretical perspectives are related. The differences are not so much the specific determinant(s) of subsidiary decision-making autonomy. For example, several perspectives predict that subsidiary decision-making autonomy will increase when the need for local embeddedness

increases. According to the integration-responsiveness framework this is because the subsidiary has to be able to respond to changes in the environment. Information-processing theory claims that decision-making autonomy enables subsidiaries to respond to environmental complexity and uncertainty. The resource dependency theory argues that in order to tap into local resources, a subsidiary has to have more decision-making power. Agency theory, however, argues that agency problems caused by information asymmetry between headquarters and subsidiaries explain decreasing subsidiary decision-making autonomy. According to institutional theory, greater decision-making autonomy derives from the need to be locally embedded coinciding with isomorphic pressures. Whereas the direction of a hypothesized determinant is often similar in the theoretical perspectives, the differences arise regarding underlying causal mechanism.

Concerning the consequence(s) of subsidiary decision-making autonomy, business network theory argues that the headquarters is an outsider of the local business networks of subsidiaries, and that it is thus better that subsidiaries take decisions to respond to local contingencies. Through decision-making autonomy, subsidiaries can tap into knowledge and resources, which increases for example subsidiary innovation (more on that in Chapter 5 and Chapter 6). On the other hand, according to the perspective focusing on the role and the function of headquarters in subsidiary operations, headquarters has a fair understanding of knowledge about innovation and has valuable expertise supporting for the innovation project. The headquarters therefore guarantees the proper application of its knowledge at the subsidiary level. Consequently, the headquarters centralizes its decision making reducing subsidiary decision making autonomy (see Chapter 4 for an application on distance and Chapter 5 for an application on innovation).

2.4. Empirical findings

2.4.1. Determinants of subsidiary decision-making autonomy

Table 2.1 provides an overview of the eighteen empirical studies using various theories to explain the determinants of decision-making autonomy included in our assessment of

empirical results obtained so far.[2] These eighteen studies measure subsidiary decision-making autonomy with multi-item scales. Some studies (e.g., Männik et al., 2005) measure subsidiary decision-making autonomy indirectly via an assessment of subsidiary business functions. Others (e.g., Johnston & Menguc, 2007, Gammelgaard et al., 2012b) apply more direct measures by assessing the degree of decision-making. An evolutionary process can be observed here regarding the measurement of decision making autonomy; whereas earlier studies have focused on business functions, more recent studies use actual decision-making authority as a measure of autonomy. This evolutionary process is also reflected in this thesis. In Chapter 3 we use the first type of measurement based on business functions. In Chapters 4, 5, and 6 we use the measure that captures decision making. Using these two proxies for subsidiary decision-making autonomy, a range of independent variables has been included in extant literature. These independent variables are sometimes measured in different ways, but often related and occasionally exactly similar.

[2] We initially identified twenty-five empirical studies. Six of these twenty-five studies (Aylmer, 1970; Bowman et al., 2000; Garnier et al., 1979; Goehle, 1980; Picard, 1977; Stopford & Wells, 1972) were excluded because these were merely descriptive studies, making it difficult to identify statistically significant variables and compare their findings with other studies. We also excluded the study of Johnston (2005) because it is virtually similar to Johnston and Menguc (2007).

Table 2.1. Overview of the empirical studies on the determinants of subsidiary decision-making autonomy

	Author(s)	Word(-s) used	Theory applied	Main variables	Home market(s)	Host Market(s)	Empirical method	Decision-making autonomy measure
1	Hedlund (1981)	Autonomy	Not specified	Subsidiary and parent size, subsidiary performance, parent's international experience, entry mode, subsidiary export, local environment.	Sweden	Various	OLS	Five point scales on sixteen decisions concerning subsidiary operations.
2	Garnier (1982)	Decision-making autonomy	Not specified	Parent- and subsidiary size, parent's ownership policy, subsidiary performance subsidiary age, R&D, integration, local environment.	U.S	Various	OLS	The level of the individual decisions concerning.
3	Gate and Egelhoff (1986)	Centralization versus decentralization	Contingency theory	Subsidiary- and parent size, product diversity, local environment, subsidiary age, entry mode, parent's ownership	Various	Various	OLS	Three scales on twenty-two different decisions concerning financial, manufacturing, and marketing.
4	Taggart and Hood (1999)	Decision-making autonomy	Not specified	Subsidiary age, subsidiary size, subsidiary's export, R&D, market scope.	Various	Various	OLS and Logit	Four scales on decisions concerning the markets it serves and the product range it supplies.
5	Vachani (1999)	Autonomy	Information-processing theory (like agency theory)	(Un)related product diversity, subsidiary structure, (un)related geographic diversification.	Various	Various	OLS	Seven point scale on marketing, human resources, manufacturing and financial decisions.
6	Simões et al. (2002)	Autonomy	Not specified	R&D, subsidiary age, market scope, subsidiary size, integration.	Various	Portugal	Logit	Four point scales on eleven dimensions concerning the business function of subsidiary.
7	Edwards et al. (2002)	Autonomy	Not specified	Integration; world product mandate, subsidiary owned information, geographic distance, subsidiary's product specialization level.	Various	Malaysia	OLS	Five point Likert scales on seventeen business activities.
8	Männik et al. (2005)	Decision-making autonomy	Not specified	Subsidiary size, MNE national origin, industry groups.	Various	Various	ANOVA and MANOVA	Three point scales on thirteen business functions.
9	Luo (2006)	Autonomy	Information-processing theory	Parent's international experience, environmental conditions.	Various	China	OLS	Five point scales on ten decisions.
10	Johnston and Menguc (2007)	Autonomy	Resource-dependence theory	Subsidiary size.	Various	Australia	Post hoc analysis	Five point scales on nine items, then using factor analysis to create an autonomy index.
11	Fenton-O'Creevy et al. (2008)	Centralized control	Institutional theory	Unionization, market scope.	Various	Various	Negative binomial regression	Counting on the six cores HRM categories (centralized control index that ranges from 0 to 6).

Table 2.1. (continued)

	Author(s)	Word(-s) used	Theory applied	Main variables	Home market(s)	Host Market(s)	Empirical method	Decision-making autonomy measure
12	Björkman and Piekkari (2009)	Centralization	Resource-dependence theory	Subsidiary's language competences.	Various	Finland, China	OLS	Five point scales on the strategic goals of the subsidiary.
13	Williams and van Triest (2009)	Decentralization	Not specified	Corporate innovativeness, share values, cultural distance.	Various	Various	OLS	Five point scales on the four decisions: new technology investment, human resource policy, headcount, and budget.
14	Ambos et al. (2010)	Autonomy	Resource-dependence theory	Headquarter's monitoring.	Various	Various	Structural equation model	Five point scales on three decisions such as entering new markets, investing in major plant, increasing expenditure of R&D.
15	Ambos et al. (2011)	Centralization	Business network theory	Internal and external embeddedness.	Germany	Various	OLS	Five point scales on nine decisions: operations of subsidiaries abroad.
16	Gammelgaard et al. (2012b)	Autonomy (decision-making authority)	Business network theory	Intra-organizational network relationships, subsidiary management, value-chain activity, job occupation.	Various	Various	OLS	Threes point scales on strategic and operational decisions.
17	Schüler-Zhou and Schüller (2013)	Decision-making autonomy	Resource-dependence theory	Legal status of parent firm, reverse knowledge transfer.	China	Germany	OLS	Five point scales on thirteen decisions regarding subsidiary operations.
18	Chiao and Ying (2013)	Autonomy	Business network theory	Internal range, internal strength, external range and external strength.	Taiwan	Various	OLS	Three point scales on five decisions concerning subsidiary operations.

By identifying the most common characteristics of the independent variables through the definitions in these empirical studies, we classify the determinants of decision-making autonomy in five clusters. That is, those determinants that relate to the strategic role of the subsidiary, organizational complexity, decision- and control structure, general MNE characteristics, and industry- and country-level features (see Table 2.2). Within each of these clusters, scholars have used a specific independent variable that has been associated with the degree of subsidiary decision-making autonomy. For example, a subsidiary's strategic role has been operationalized by world product mandate (Ambos et al., 2011; Edwards et al., 2002) but also by market scope (Fenton-O'Creevy et al., 2008; Simões et al., 2002).

Table 2.2 makes a distinction between the sign of the estimated parameter coefficient (that shows the direction of a particular decision-making autonomy determinant) and its statistical significance. Without discussing each independent variable that has been included the eighteen large scale empirical studies separately, our assessment shows general convergence in terms of results obtained for the first three clusters, and mixed results for the fourth and fifth cluster. Our review of the empirical results indicates that strategic role, organizational complexity, decision- and control structure, and general MNE characteristics are key determinants of subsidiary decision-making autonomy.

For the first cluster, we identified eleven different independent variables that are used to proxy the strategic role of a subsidiary. Almost all of the eighteen empirical studies include one or more measures of a subsidiary's strategic role, either by measuring the level of integration in the value chain (four studies) or by measuring the degree of host market orientation (also four studies). For these and other variables – such as the percentage of a subsidiary's purchases from the parent or the presence of a world product mandate – the findings are generally in line with the theoretical predictions.

Table 2.2. Results of large scale empirical studies on the determinants of subsidiary decision-making autonomy (DMA)

	(1) Expected effect on DMA	(2) Results: Negative (p<.05)	(3) Results: Negative (non sig.)	(4) Results: Positive (non sig.)	(5) Results: Positive (p<.05)	(6) Mixed results
1. Strategic role (41 results, 13 studies)						
* Subsidiary's level of integration in value chain	-	#1(24), #2(42)(FRANCE), #2(62)(MEXICO-II)	#2(40)(MEXICO-I), #4(177), #6(119),			
* Subsidiary's level of host market orientation	+		#2(42)(FRANCE), #3(94)(FIN)	#2(40)(MEXICO-I), #3(94)(MAR)	#2(62)(MEXICO-II), #3(94)(MAN), #4(177),	
* Percentage of subsidiary's purchases from parent	-	#2(42)(FRANCE), #2(40)(MEXICO-I), #2(62)(MEXICO-II), #3(94)(MAR, MAN), #4(177), #12(119)			#3(94)(FIN), #17(45)	
* Percentage of subsidiary's sales to parent	-	#2(42)(FRANCE), #2(40)(MEXICO-I), #2(62)(MEXICO-II)	#4(177)			
* Subsidiary's level of market share (market scope)	-	#1(24), #11(441)	#6(119), #12(119), #13(119)			
* Subsidiary's scope of activities	-		#12(119)			
* Level of reverse transfer of knowledge to parent	+				#17(45)	
* Innovativeness	+				#9(188), #13(119),	
* Mandate	Not specified			#15(73)	#7(71)	
* External embeddedness	+			#15(73)	#18(1473)	
* Internal embeddedness	-	#15(73), #16(381), #18(1473)				
2. Organizational complexity (49 results, 16 studies)						
* Subsidiary's research competence (R&D over sales)	+		#2(40)(MEXICO-I), #6(119), #15(73)	#2(42)(FRANCE), #2(62)(MEXICO-II), #10(313)	#4(177), #9(188), #15(73)	
* Subsidiary's marketing capabilities	+				#6(119)	
* Subsidiary's level of product specialization	+			#7(71)		
* Information owned by subsidiary	+				#7(71)	
* MNE degree of product diversification (the number of products or product lines manufactured by parent or by offered subsidiaries)	+	#2(40)(MEXICO-I)		#2(62)(MEXICO-II), #3(94)(MAN), #5(63)	#2(42)(FRANCE), #3(94)(MAR, FIN)	
* Parent's degree of international geographic diversification (number of countries of foreign sales)	+ / -	#2(62)(MEXICO-II),	#2(42)(FRANCE), #2(40)(MEXICO-I),	#3(94)(MAN, FIN)	#3(94)(MAR)	#5(63)
* Subsidiary size	+ / -		#4(177), #9(188), #12(119), #15(73), #16(381),	#4(177), #6(119), #11(441), #12(119). #17(45)		#1(24), #2(42)(FRANCE), #2(40)(MEXICO-I), #2(62)(MEXICO-II), #3(94)(MAR, MAN, FIN), #8(433), #10(313)
* MNE size	+	#2(40)(MEXICO-I), #3(94)(MAR)	#2(42)(FRANCE), #2(62)(MEXICO-II), #17(45), #18(1473)	#3(94)(MAN)	#3(94)(FIN)	

Table 2.2. (continued)

	(1) Expected effect on DMA	(2) Results: Negative (p<.05)	(3) Results: Negative (non sig.)	(4) Results: Positive (non sig.)	(5) Results: Positive (p<.05)	(6) Mixed results
3. Decision and control structure (24 results, 11 studies)						
* Number of parent's representatives on subsidiary's board	-	#2(40)(MEXICO-I), #2(62)(MEXICO-II), #10(313)	#2(42)(FRANCE), #12(119)			
* Extent of parent ownership in foreign subsidiaries	-	#2(42)(FRANCE), #2(40)(MEXICO-I), #2(62)(MEXICO-II), #3(94)(MAR, FIN), #8(433), #17(45)	#3(94)(MAN)	#10(313)		
* Mode of entry (Greenfield over acquisition)	-	#2(62)(MEXICO-II), #3(94)(MAR,MAN), #6(119), #18(1473)	#2(42)(FRANCE) #9(188), #12(119), #16(381)	#2(40)(MEXICO-I), #3(94)(FIN)		
* Subsidiary management	+	#16(381)				
* Monitoring of headquarters	-	#14(257)				
4. General MNE characteristics (32 results, 14 studies)						
* Subsidiary performance	-		#2(62)(MEXICO-II)	#1(24), #2(40)(MEXICO-I), #12(119), #15(73), #18(1473)	#2(42)(FRANCE), #16 (381)	
* Subsidiary age	+		#2(40)(MEXICO-I), #3(94)(MAN), #11(441)	#2(42)(FRANCE), #2(62)(MEXICO-II), #3(94)(MAR), #4(177), #6(119)	#15(73), #17(45), #18(1473), #9(188)	
* Subsidiary's export	+	#4(177)	#18(1473)			
* Parent's international experience (in years)	-			#3(94)(MAN)	#3(94)(MAR, FIN), #9(188)	
* Parent's legal status (state ownership)	-		#17(45)			
* Parent's product division structure	+				#5(63)	
* Parent's area division structure	+			#5(63)		
* Parent's international division structure	+			#5(63		
* Subsidiary's language competence	+				#12(119)	
* Subsidiary location	Not specified		#12(119)	#9(188)		
5. Industry and country level (40 results, 13 studies)						
* Subsidiary operating in high technology industry	+	#8(433)	#6(119), #16(381)		#9(188)	
* Manufacturing sector	Not specified		#11(441)	#10(313)		
* Marketing sector	Not specified		#10(313)			
* Finance/ business/ services	Not specified		#10(313), #16(381)	#13(119)		
* Home institutional environment	+				#6(119), #12(119)	
* Host institutional environment	-	#11(441), #9(188)	#17(45),			
* Developed host country (versus less developed country)	+				#8(433), #11(441)	
* Intensity of local competition	-		#1(24)			
* Competitive climate change	+	#3(94)(MAR)	#3(94)(MAN, FIN)			
* Uncertainty of subsidiary's environment	+		#9(188)	#1(24)		

Table 2.2. (continued)

	(1) Expected effect on DMA	(2) Results: Negative (p<.05)	(3) Results: Negative (non sig.)	(4) Results: Positive (non sig.)	(5) Results: Positive (p<.05)	(6) Mixed results
5. Industry- and country level variables (cont.)						
* Local manager's perception of local laws on foreign investment	-		#2(40)(MEXICO-I)	#2(42)(FRANCE), #2(62)(MEXICO-II)		
* Local manager's perception of differences in executives' attitude, value, and beliefs.	-	#2(42)(FRANCE), #2(40)(MEXICO-I), #2(62)(MEXICO-II)				
* Local manager's perception of value of local (business) education system	-	#2(42)(FRANCE), #2(40)(MEXICO-I), #2(62)(MEXICO-II)				
* Proportion of material inputs sourced in the local economy	+			#4(177)	#6(119)	
* Parent's country of origin	+			#7(71)	#16(381)	#10(313)
* Subsidiary host country	-	#16(381)				
* Cultural distance between home and host countries	+		#9(188), #13(119)	#12(119)		

Notes:

MAN: Manufacturing
MAR: Marketing
FIN: Finance

(1) The numbers mentioned in this table refer to the studies listed below. The sample size of each study is mentioned between brackets. Studies 2 (Garnier, 1982) and 3 (Gates and Egelhoff, 1986) consist of multiple sub sample analyses for countries and industries, respectively. In addition, study 18 (Chiao and Ying, 2013) distinguished internal and external embeddedness by means of range and strength, respectively, results are the same for each.

(2) Study numbers: #1 Hedlund (1981), #2 Garnier (1982), #3 Gates and Egelhoff (1986), #4 Taggart and Hood (1999), #5 Vachani (1999), #6 Simões et al. (2002), #7 Edwards et al. (2002); #8 Männik et al. (2005), #9 Luo (2006), #10 Johnston and Menguc (2007), #11 Fenton-O'Creevy et al. (2008), #12 Björkman and Piekkari (2009), #13 Williams and van Triest (2009), #14 Ambos et al. (2010), #15 Ambos et al. (2011), #16 Gammelgaard et al. (2012b), #17 Schüler-Zhou and Schüller (2013), #18 Chiao and Ying (2013).

Next to strategic role, most of the eighteen studies incorporate one or more variables capturing the relationship between subsidiary decision-making autonomy and the organizational complexity of an MNE by means of variables such as size, degree of diversification and information that is owned by the subsidiary. Eight different variables are included in eighteen studies yielding forty-nine different results. The results for most of the variables in the studies are mixed. For example, most studies report both a positive (and often also significant) and negative relationship between a subsidiary's research competence and decision-making autonomy (e.g., Ambos et al., 2011; Gainer, 1982; Johnston & Menguc, 2007; Luo, 2006; Taggart & Hood, 1999). With respect to size, theory predicts a non-linear effect, which is reflected in the mixed empirical results obtained so far (e.g., Hedlund, 1981; Johnston & Menguc, 2007). Similar to the results for the variables that proxy a subsidiary's strategic role, the results for organizational complexity are consistent and in line with theoretical predictions.

The third cluster of variables that are used to explain differences in subsidiary decision-making autonomy concerns the MNE's decision- and control structure. Five different proxies (e.g., the number of parent representatives on the subsidiary's board or the extent of parent ownership) have been used to capture this. The results are consistent, with most studies finding a negative relationship between decision-making autonomy and more intense monitoring and control systems. With the exception of Gates and Egelhoff (1986) and Garnier (1982), all seven studies examining the impact of a parent's entry mode on subsidiary decision-making autonomy find that greenfields are associated with lower levels of decision-making autonomy (e.g., Chiao & Ying, 2013; Gammelgaard et al., 2012b; Garnier, 1982; Gates & Egelhoff, 1986; Luo, 2006). Besides Johnston and Menguc (2007), who reported a non-significantly positive effect, all other studies found a negative effect of parent ownership on subsidiary decision-making autonomy (e.g., Garnier, 1982; Schüler-Zhou & Schüller, 2013).

For the fourth cluster of decision-making autonomy determinants, we find that almost all of the eighteen empirical studies incorporate subsidiary- and overall MNE characteristics such as firm age or performance, the parent's international experience and the divisional structure of the MNE, etc. The results are less consistent compared with the other

three clusters. For example, a parent's international experience is expected to be negatively associated with decision-making autonomy, but the empirical findings report the opposite (Gates & Egelhoff, 1986; Luo, 2006). Regarding subsidiary performance, all studies except for Garnier (1982) indicate that high subsidiary performance is associated with high subsidiary decision-making autonomy (albeit the results are not always significant here). Several studies found that subsidiary age is positively related to subsidiary decision-making autonomy (Ambos et al., 2011; Gates & Egelhoff, 1986), although some others report insignificant effects (e.g., Garnier, 1982; Taggart & Hood, 1999). The divisional structure of the MNE is the only variable in this cluster for which we find consistent results. MNEs with a divisional structure based on functional areas have lower levels of subsidiary decision-making autonomy. The variables in this cluster are mostly included as control variables. They are not theorized about explicitly because they are often not the variables of interest, but serve as "residual" independent variables. A similar observation holds for our final cluster of variables including industry- and country-level characteristics.

The fifth cluster includes variables that proxy industry- and country-level effects. Although these are typically included as control variables, very few studies analyze them as main determinants of subsidiary decision-making autonomy. Hedlund (1981), for example, found that Swedish and Japanese firms are more decentralized than U.S. firms, a finding in line with our main result presented in Chapter 3. As foreign subsidiaries tend to conform to the rules, norms and belief systems that prevail in their environment (DiMaggio & Powell, 1983), a subsidiary's decision-making autonomy varies according to the institutional setting of the home- and host country (see Chapter 3). Subsidiaries operating in an institutionally "thick" context face more and other pressures than subsidiaries that operate in a context in which less isomorphic pressures exist. Hence, subsidiaries can be expected to have levels of decision-making autonomy depending on the national business systems in which they operate.

To sum up, our empirical overview on the determinants of decision-making autonomy indicates that despite minor differences, the overwhelming majority of the results for strategic role, organizational complexity and decision- and control structure are consistent and in line with the predictions that can be derived from the different theoretical

frameworks (see Table 2.1). Furthermore, although some studies included institutional context and national distance between home and host countries as control variables, very few studies capture these factors as main effects to examine the determinants of subsidiary decision-making autonomy. Therefore, we will attempt to explore the role of home and host country context in the Chapters 3 and 4.

2.4.2. The consequences of subsidiary decision-making autonomy

Next, we turn to the consequences of subsidiary decision-making autonomy identified from the empirical studies obtained so far. Table 2.3 offers an overview of the thirteen empirical studies using different theoretical perspectives to examine the role of decision-making autonomy in the operation of both MNE and subsidiary. In line with the preceding discussion on the measure of decision-making autonomy, these studies also measure decision-making autonomy with multi-item scales on decisions regarding business activities of subsidiary, and they are summed into one index, which is used as a proxy for decision-making autonomy measure. Our literature search yielded the thirteen empirical studies in which subsidiary decision-making autonomy is used as an independent variable (direct effect) or an interaction variable (moderating effect).

Table 2.3. Overview of the empirical studies on the consequences of subsidiary decision-making autonomy (DMA)

	Author(s)	Word(-s) used	Theory applied	The effect of DMA on factor(s)	Home market(s)	Host Market(s)	Empirical method	Decision-making autonomy measure
1	Birkinshaw and Hood (2000)	Decision-making autonomy	Resource dependence theory	Leading-edge industry cluster	Various	Various	OLS	Three point scales on three decisions concerning product design, manufacturing and manufacture process.
2	O'Donnell (2000)	Autonomy	Agency theory	HQs' supervision of foreign subsidiary managers, (bureaucratic) monitoring mechanisms.	U.S	Various	OLS	Four point scales on sixteen decisions regarding capital investment, manufacturing processes and training methods.
3	McDonald et al. (2008)	Autonomy	Business network theory	Subsidiary performance	U.K	Various	Ordered Probit	Dummy variable
4	Slangen and Hennart (2008)	Autonomy	Not specified	Entry mode	Netherlands	Various	Logit	Five point Likert scales on twelve business functions of subsidiary.
5	Takeuchi et al. (2008)	Decision autonomy	Not specified	The level of work, interaction, and general adjustment.	Various	Various	OLS	Five points scales on decisions about the introduction of new service or product.
6	Jindra et al. (2009)	Autonomy	Resource dependence theory	The extent and the intensity of vertical linkages.	Various	Various	OLS	Four point scales on business functions such as supplies and logistics, distribution and sales.
7	Scott et al. (2010)	Autonomy	Not specified	Strategy creativity, initiative generation and performance	Not specified	Ireland	Structural equation model	Five point scales on three decisions such as change product design, change product price, new production introduction.
8	Rabbiosi (2011)	Autonomy	Not specified	Inverse knowledge transfer	Italy	Various	Ordered Probit	Give point scales on four decisions concerning R&D projects, planning resources, introduction of new technology, changes in products/services, and hiring and firing of the subsidiary workforce.

Table 2.3. (continued)

	Author(s)	Word(-s) used	Theory applied	The effect of DMA on factor(s)	Home market(s)	Host Market(s)	Empirical method	Decision-making autonomy measure
9	Ciabuschi and Martín (2011)	Autonomy	Business network theory	Innovation development intensity	Various	Various	Structural equation model	Seven point scales on four decisions such as investments on R&D, investments in acquisitions, to introduce new products domestically and internationally.
10	Nell et al. (2011)	Autonomy	Not specified	Headquarters local relationship	Various	Various	OLS	Five point scales on four decisions.
11	Slangen (2011)	Autonomy (decision-making authority)	Not specified	Entry mode	Netherlands	Various	Logit	Five point Likert scales on twelve business functions of subsidiary.
12	Gammelgaard et al. (2012a)	Autonomy	Business network theory	Subsidiary performance, intra-organizational network, inter-organizational network.	Various	Various	OLS	Five point scales on strategic and operational decisions.
13	Giroud et al. (2012)	Autonomy	Not specified	The intensity of backward linkages with suppliers.	Various	Various	OLS	Four point scales on production and operational management, basic and applied research.

Table 2.4 provides a distinction between the sign and the estimated parameter coefficient that indicates the impact of decision-making autonomy on dependent variables and their statistical significance. Similar to the previous section, without discussing the impact of decision-making autonomy on each dependent variable, our assessment shows general convergence in terms of results obtained for the impact of subsidiary decision-making autonomy on MNE and subsidiary level outcomes.

Concerning subsidiary characteristics, we identified twelve different dependent variables, which scholars used to examine the role of decision-making autonomy. For example, using resource dependence theory, Jindra et al. (2009) found that subsidiary with decision-making autonomy in terms of market, product, and value-adding scope are not only more likely to form linkages, per se, but also more intense linkages compared to subsidiaries with a narrower functional scope and level of decision-making autonomy. Albeit using business network theory, the finding of Gammelgaard et al. (2012a) is consistent with that of Jindra et al. (2009).

Concerning MNE characteristics, most of the thirteen studies incorporate variables such as entry model of MNE, bureaucratic monitoring mechanisms, supervision of headquarters, inverse knowledge transfer, and headquarters' local relationship. Similar to the results for the variables concerning subsidiary characteristics, most results relating to MNE characteristics are in line with theoretical predictions. Decision-making autonomy not only has direct effects on MNE or subsidiary outcomes. For example, Slangen (2011) argued that the positive effects of geographic, native and language barrier on the likelihood of MNE's greenfield entry is weaker at higher levels of subsidiary decision-making autonomy. Decision making autonomy is a moderating variable in this study. When subsidiaries have high decision-making autonomy, they interact less intensely with their headquarters. In such cases the management costs of acquisition in culturally distant countries need not exceed those of their greenfield counterparts, because the culturally different workforce and practices that come with acquisitions will not cause cultural friction when there is little subsidiary-parent interaction (Shenkar, 2001).

Table 2.4. Results of the empirical studies on the consequences of subsidiary decision-making autonomy (DMA)

	(1) Expected effect of DMA on factors	(2) Results: Negative (p<.05)	(3) Results: Negative (non sig.)	(4) Results: Positive (non sig..)	(5) Results: Positive (p<.05)	(6) Mixed results
1. Subsidiary characteristics (8 studies)						
* Subsidiary performance	+				#3(391), #7(264), #12(350)	
* The extent of vertical linkages	+				#6(318)	
* The intensity of vertical linkages	+				#6(315), #12(350)	
* Strategy creativity	+				#7(264)	
* Initiative generation	+				#7(264)	
* Innovation development intensity	+/-				#9(63)	
* Subsidiary's intra-organizational networks	-				#12(350)	
* Subsidiary's inter-organizational networks	+					
* The intensity of backward linkages with suppliers	+			#13(809)		
* The relationship between subsidiary experience and work adjustment	-	#5(187)				
* The relationship between subsidiary experience and interaction adjustment	-		#5(187)			
* The relationship between subsidiary experience and general adjustment	-		#5(187)			
2. MNE characteristics (6 studies)						
* Bureaucratic monitoring mechanisms	-	#2(89)				
* Supervision of headquarters	-	#2(89)				
* Entry mode of parent firm (Greenfield over acquisition)	-	#4(171), #11(231)				
* Work adjustment (expatriate manager)	+				#5(187)	
* Interaction adjustment (expatriate manager)	+			#5(187)		
* General adjustment (expatriate manager)	+				#5(187)	
* Inverse knowledge transfer	+			#8(280)		
* Headquarters local relationship	+				#10(168)	
* The relationship between global integration pressure and work adjustment	+			#5(187)		
* The relationship between global integration pressure and interaction adjustment	+				#5(187)	
* The relationship between global integration pressure and general adjustment	+			#5(187)		
* The relationship between inverse knowledge transfer and personal coordination	+				#8(280)	
* The relationship between inverse knowledge transfer and electronic-based coordination	-			#8(280)		
3. Variable relating to industry level (1 study)						
* Leading-edge industry clusters	+				#1(229)	
4. Variables concerning country context (2 studies)						
* The relationship between cultural distance and entry mode	-	#4(171)				
* The relationship between geographic distance barrier and entry mode	-	#11(231)				
* The relationship between native language barrier and entry mode	-	#11(231)				
* The relationship between foreign language barrier and entry mode	-	#11(231)				

Notes:

(1) The numbers mentioned in this table refer to the studies listed below. The sample size of each study is mentioned between brackets.

(2) Study numbers: #1 Birkinshaw and Hood (2000), #2 O'Donnell (2000), #3 McDonald et al. (2008), #4 Slangen and Hennart (2008), #5 Takeuchi et al. (2008), #6 Jindra et al. (2009), #7 Scott et al. (2010); #8 Rabbiosi et al. (2011), #9 Ciabuschi and Martín (2011), #10 Nell et al. (2011), #11 Slangen (2011), #12 Gammelgaard et al. (2012a), #13 Giroud et al. (2012).

A similar argument is put forward to relate subsidiary decision-making autonomy to geographic and language barriers and MNE's entry mode (see Slangen, 2011).

To summarize, having taken stock of the theoretical arguments and empirical results obtained so far, we conclude that decision-making autonomy plays an important role in understanding both the performance of the subsidiary itself and the MNE as a whole. With respect to studies on the impact of decision-making autonomy, our review shows that despite the importance of innovation for MNEs and the increased importance of subsidiaries in generating these innovations, our understanding of the relation between innovation and decision-making autonomy is limited. We will concentrate on this relation in Chapters 5 and 6.

2.5. Conclusions

A proper understanding of the role and position of the subsidiary is pivotal to our understanding of the overall functioning of the MNE. The strategic changes in the subsidiary's position due to the ongoing process of globalization are associated with a tension between the MNE's wish to control and the need for subsidiaries to have more decision-making autonomy. As our review shows, subsidiary decision-making autonomy is important as it is related to a range of subsidiary and MNE specific characteristics.

In our review of the determinants and the consequences of subsidiary decision-making autonomy we have presented and discussed seven theoretical perspectives to explain the differences in levels of subsidiary decision-making autonomy and its effect on MNE and subsidiary. These perspectives are the integration-responsiveness framework, the resource dependence theory, agency theory, institutional theory, business network theory, the perspective centering on the role of headquarters, and information-processing theory. Together these related perspectives broadly cover the field of international business and management. Our review shows that these different theoretical perspectives used to understand the degree of subsidiary decision-making autonomy mostly differ in the nature of the theoretical argument but not (much) in the direction of their subsequent prediction. We then moved on to the empirical findings obtained in empirical studies on the

determinants and the consequences of subsidiary decision-making autonomy, respectively. Through our literature review, we found that although the core of these findings is often in line with (or at least not opposing) the main theoretical predictions, no study pays attention to if and how home and host country institutional context relates to the level of a subsidiary's decision-making autonomy. Therefore, the first empirical chapter (Chapter 3) in this thesis attempts to investigate how institutional environments in home and host countries affect the level of a subsidiary's decision-making autonomy. A country's institutional environment partly determines a unit's organizational behaviour and structure (Kostova, 1999; Soskice, 1999). Using institutional theory (DiMaggio & Powell, 1983; Oliver, 1997), Chapter 3 focuses on the country-level determinants of subsidiary decision-making autonomy, that is institutional environment in home and host countries. This analysis of country level institutional factors is continued in Chapter 4 when we study how differences between home and host countries affect decision-making autonomy of subsidiaries. Little is known about the impact of distance between home and host country contexts on the distribution of decision-making autonomy in the headquarters-subsidiary relationship. For that reason, Chapter 4 will explore how the distance between home and host country contexts relates to the level of a subsidiary's decision-making autonomy.

As we argued in this chapter, the subsidiary is increasingly seen as a crucial factor determining the competitiveness of the MNE as a whole. Specifically, the subsidiary is viewed as important source of knowledge contributing to innovation (Frost et al., 2002; Gupta & Govindrajan, 2000; Phene & Almeida, 2008; Tallman & Phene, 2007; Vanaik et al., 2005). Accordingly, a good understanding of subsidiary innovation is important as subsidiary innovation results in increased operational efficiency, better subsidiary performance in local markets – e.g., due to first-mover advantages (Damanpour et al., 2009) – and better MNE performance through the spill-over of new knowledge and market opportunities (Ameida & Phene, 2004; Phene & Almeida, 2008). Our literature review revealed that although several studies have focused on the consequences of decision-making autonomy, the question of how decision-making autonomy is related to subsidiary innovation is still underexplored. Therefore, Chapter 5 aims to examine the relationship between decision-making autonomy and subsidiary innovation. As a key role of the

subsidiary concerns the possibility to tap into local knowledge pools (such a universities and other knowledge intensive organizations) scholars have increasingly stressed the need for subsidiaries to become locally embedded in the host country. This external embeddedness is supposed to positively affect the subsidiary knowledge pool, and contribute to its innovative potential. The link between decision-making autonomy, embeddedness and innovation at the subsidiary level is therefore explored in Chapter 6.

Chapter 3

Home- and host country institutional environment and subsidiary decision-making autonomy[3]

3.1. Introduction

The increasing level of global competition has caused international managers to define new strategies for multinational enterprises (MNEs). The relationship between the parent company and its subsidiary is becoming central to an understanding of the functioning of MNEs because subsidiaries play an increasing role in generating competitive advantages for the MNE (Birkinshaw et al., 1998). The decision-making autonomy of subsidiaries is at the centre stage in this debate. A multinational company can be conceptualized as a network of exchange relationships among organizational units, including the headquarters and the different national subsidiaries, which are embedded in what Zaheer (1995b) describes as the "meta-environment" or, more recently by George & Zaheer (2006) or de Jong et al. (2011) as the "geographic signature". That is, MNEs operate in multiple national environments, each with its own path-dependent institutional characteristics and this differentiates MNEs from domestic firms (Dunning & Lundan, 2009; Rugman & Oh, 2010). In this chapter, we present a first attempt to explain how variations in the home- and host country environments, next to and on top of parent company- and subsidiary characteristics, determine variations in the

[3] This chapter appeared in the *Problems and Perspectives in Management* (de Jong & Dut, 2010).

decision-making autonomy of subsidiaries. In so doing, we respond to the call for more interdisciplinary as well as more empirical work in this field (Geppert & Williams, 2006; Paterson & Brock, 2002).

A stream of relatively recent studies in organization science – following earlier work in the 1980s (Garnier, 1982; Gates & Egelhoff, 1986; Goehle, 1980; Hedlund, 1981; White & Poynter, 1984) and the 1990s (Birkinshaw & Morrison, 1995; Birkinshaw & Hood, 1998; Blaine, 1994; Gnan & Songini, 1995; Jarillo & Martinez, 1990) – focuses on the analysis of the role of the subsidiary, in order to explain inter-organizational differences in MNE behavior and performance (Geppert & Williams, 2006; Paterson & Brock, 2002). Several studies (Chiao & Ying, 2013; Dörrenbächer & Gammelgaard, 2006; Gammelgaard et al., 2012a, b; Ferner et al., 2004) have pointed out that the level of decision-making autonomy of subsidiaries varies strongly. That is, some subsidiaries have relatively high levels of decision-making independence while others are tightly controlled by the headquarters. Furthermore, there is evidence that this strategy may change over time (Ambos et al., 2011; Dörrenbächer & Gammelgaard, 2006; Gammelgaard et al., 2012a). Gnan and Songini (1995), for instance, show that Japanese firms allow subsidiaries little decision-making freedom in the early stages of development, while there has been a significant relaxation of this position in recent years (cf. Dirks, 1995). Conversely, Blaine (1994) found that German-owned subsidiaries have lost important elements of their decision-making power. All in all, these studies point out that the relationship between the parent company and its foreign subsidiaries has become more important but also more complicated and sometimes even loaded with conflicts. Decision-making autonomy boils down to the essence of power. Given the increasing importance of subsidiary activities for headquarters performance the question of decision-making autonomy is omnipresent in headquarters-subsidiary relationships (Takeuchi et al., 2008).

When reviewing the subsidiary literature, two broad conclusions can be drawn, at least. First, previous studies of subsidiary offer a helpful but scattered picture of the subsidiary's decision-making position. These studies can be classified into those that primarily focus on characteristics of the parent company (e.g., size, the level of product diversification) or of the subsidiary (e.g., size, performance, ownership). For example, it has

been argued that the size of the parent company or the level of its product diversification matters for decision-making autonomy (Johnston, 2005). In a similar vein, the size of the subsidiary, its performance and extent of ownership are related to its decision-making autonomy as well (Johnston & Menguc, 2007). In comparison to the various firm characteristics, however, there has been much less analysis concerning the effects of the local institutional environment on subsidiary decision-making autonomy. Hence, we specify hypotheses that detail effects on subsidiary decision-making autonomy of home- and host-country environments. Together with parent and subsidiary characteristics we integrate them into one framework. Our integrative research model allows us to disentangle how the division of decision-making autonomy between the headquarters and the operational unit responds to this complex set of factors. Herein lays the first contribution of this chapter.

Ample case study and survey evidence of decision-making autonomy are available. Case studies help to identify and explore processes, and for that reason subsidiary studies have used this method to investigate particular decision-making autonomy-related events. Using case studies, researchers revealed insights into the origin and flow of headquarters-subsidiary decision-making processes. Notwithstanding the importance of case studies, they focus on single events and therefore lack the scope needed to generalize findings. Due to differences in measures and samples survey results are difficult to compare. In particular the effects of parent-company characteristics on decision-making autonomy have been mixed and no clear understanding for these determinants has yet been developed. The evidence for the impact of subsidiary characteristics on their decision-making autonomy is somewhat more robust and shows a little more consistency than parent-company characteristics.

The second contribution concerns the empirical test of the integrated framework. This chapter intends to move beyond case-study literature and use secondary data-sources (that is, the Orbis database) to collect information for a sample of companies and their environments. We collected data from 263 subsidiaries of 18 MNEs in 25 European countries. Our European focus aims at complimenting existing work that analyses the relationship between US MNEs and their subsidiaries. In addition to that, the majority of the European studies on the topic generally include one or two specific European countries (for example, Birkinshaw & Hood, 1997; Hedlund, 1981; Jarillo & Martinez, 1990; Taggart &

Hood, 1999). Our international coverage aims at going beyond the bilateral perspective. In so doing, we present three other novel twists to the literature. First, we present a relatively new proxy for the decision-making autonomy of the subsidiary. Based on the subsidiary literature, we assembled a list of ten different business functions and other activities that each requires management attention of subsidiaries and/or headquarters – i.e., R&D, manufacturing, marketing, sales, market scope, network activities, outsourcing, cooperation, export-import activities and the organisation of the subsidiary establishment (see also, for example, Jindra et al., 2009). We used detailed information available in the Orbis database for each of these ten dimensions to create our proxy for the overall decision-making autonomy of the subsidiary. Second, the headquarters is located in a particular national business context or system. We will analyse whether, and if so: how, this national context determines the amount of decision-making autonomy of subsidiaries. Third, we also include measures for the institutional environments of the host countries, i.e., the particular context in which the subsidiary operates. Decision-making autonomy is not only determined by home country contexts but also by national business practices in host country contexts of MNEs. Although our research method has limitations – which we will elaborate on in the discussion section – the data have enabled us to develop a good insight into the role of institutional environments in the decision-making autonomy of subsidiaries.

In sum, this chapter makes first steps in unravelling the relation between institutional environment and its effects on the determinants of different levels of subsidiary decision-making autonomy. More precisely, we investigate how home- and host institutional environments affect the degree of subsidiary decision-making autonomy. Section 2 in this chapter discusses the theoretical background and presents the model. Following this, the research methodology is summarized in Section 3. Section 4 presents the empirical results and associated discussion. Finally, the discussion, conclusion and limitations of this chapter are provided in Section 5 and 6, respectively.

3.2. Theory and hypotheses

The key proposition in this chapter is that subsidiary decision-making autonomy is partly shaped by the nature of the local institutional environment in which the headquarters of the MNE and the subsidiary are embedded. Institutional theory argues that, in order to survive, organisations need to gain legitimacy that is achieved through isomorphism with salient institutions (DiMaggio & Powell, 1983; Oliver, 1997). Firms will tend to conform to the rules and belief systems prevailing in their environment (Fenton-O'Creevy et al., 2008). As said, since the MNE is situated in both its country of origin and, through its subsidiaries, in a number of other countries, it operates under multiple, possibly conflicting, institutional pressures. In what follows we explain how different home- and host country environments determine the decision-making autonomy of subsidiaries.

Our first variable captures the impact of the home country environment on subsidiary decision-making autonomy. Home country environments determine the overall strategy of the MNE. Thus, the decision by e.g. a US MNE in regard to exerting centralised control of a subsidiary is motivated by deeply held assumptions concerning appropriate goal-setting that arise out of the parent company's embeddedness in a particular (USA) home country institutional setting. This is called a home country effect in IB research.

In line with Soskice (1999) we take into account that the production regimes of advanced economies can be classified into two main patterns, namely coordinated market economies (CMEs) and liberal market economy (LMEs) (cf. Hall & Soskice, 2001). Firms operating in the former context (e.g., the US, the UK, Ireland and Australia) are regarded as significantly more institutionally constrained than those in the latter (e.g., Germany and Japan), in the sense that they operate within contexts whose legal frameworks and systems of industrial relations constrain managers' decision-making autonomy in applying market-driven or technologically contingent management practices. Thus, the MNE headquarters in CME countries across the world have a local rather than a global focus and thus are less subject to centralized control which impairs their ability to respond to local market pressures. For example, German MNEs have recently embarked on a cautious internationalization process but still follow a "local responsiveness" strategy of local

differentiation among their foreign subsidiaries. Geppert and Williams (2006) argue that headquarters management representatives in Germany emphasize that subsidiaries worldwide have relative decision-making autonomy in running their own operations. Moreover, Lane (1989) shows that German and Japanese MNEs allocate more resources and responsibilities as well as organizational and financial decision-making autonomy to their subsidiaries to develop networks in host countries similar to those existing in German and Japanese industries. In short, we expect that international corporations that are in favour of imposing decentralized strategies on their subsidiaries, such as German, Japanese and Swedish MNEs, – all else equal – tend to respect the decision-making autonomy of local subsidiaries. In contrast, MNEs in Anglo-Saxon economies like to – all else equal – impose their standardized global strategies on their subsidiaries. Divergent interests and the local power resources of key subsidiary managers and employee representative bodies are played down or ignored. Therefore, we propose the following first hypothesis:

Hypothesis 1: Subsidiaries with headquarters located in CMEs are characterized by higher levels of subsidiary decision-making autonomy than subsidiaries with headquarters located in LMEs.

The second hypothesis in this chapter concerns the degree of institutional embeddedness of the subsidiaries in the *host* country. The degree of institutional embeddedness of the subsidiary in the host country represents whether the subsidiary operates in a country with a highly or weakly integrated national business system (Geppert & Williams, 2006). Nationally specific industrial orders and societal effects may create alternative paths for organizing businesses and management. The degree of embeddedness, interdependence, cohesion and integration of institutions and business organizations in the Anglo-Saxon model of capitalism is much lower than in other capitalist countries, such as Germany and Japan (Benito et al., 2003; Ferner et al., 2004). CMEs such as Germany or Japan have a highly integrated national business system whose key characteristic is that major institutions are more interdependent. For example, they have inter-linkages between national infrastructure, corporate strategy and firm behavior as a result of institutional complementarities. The

strategic interaction is reflected by dense networks that connect the managers and technical personnel inside a company to their counterparts in other firms. The internal structure of the firm is based on collaborative and cooperative modes of action (Hall & Soskice, 2001). Moreover, these economies have developed enterprise-based unions in which labor union and government agencies have very strong influences on firms, such as participating in firm decision-making. Therefore, MNEs may face several difficulties in implementing global practices in subsidiaries located in these countries. However, the LMEs of Anglo-Saxon countries have relatively low-level integrated national business systems (Whitley, 1999). They have a relatively low level of commitment and cooperation between firms and between employers and employees, and a high level of mobility of operations. The main characteristics of these LMEs are a lack of integration or systematic coordination of activities, limited legal constraints on management's use of labor resources and weak rights of employee representative bodies. Hence, MNEs are relatively easily able to apply a global strategy in subsidiaries located in these economies. As a result, we propose the following hypothesis:

Hypothesis 2: Subsidiaries located in CMEs are characterized by higher levels of subsidiary decision-making autonomy than subsidiaries located in LMEs.

The main reason for subsidiaries to have higher levels of decision-making autonomy in CMEs (compared to LMEs) is the higher need to be integrated in the local environment, which increases the need to be relatively autonomous (see also Chapters 5 and 6). Whereas the first hypothesis captures the home country effect, the second hypothesis aims to capture the host country effect.[4]

[4] We took four options into account, i.e., home CME – host CME, home CME – host LME, home LME – host LME, home LME – host CME. However, we did not present the hypotheses and results for each because i) no theory discusses or explains arguments concerning each of these four options, and ii) we checked the four pairs of home-host countries combinations, but the empirical results were not significant. To nonetheless address this issue, our model was controlled by a dummy variable to reflect whether home and host countries have the same business systems or not. This does not affect the result of the model (see Table 3.2).

3.3. Research methods

3.3.1. Data collection and sample

The data used to estimate the theoretical model are derived from Orbis. Orbis is the most appropriate single-source firm-level database for our research because it is one of the most comprehensive pan-European databases containing detailed information of many public and private companies in virtually all European countries. Overall, the database includes a wealth of information that represents a substantial amount of economic activity. The information is derived from financial reports of the subsidiaries and parent companies for 2007 including their product lines and trade activity description. This not only allows us to determine our key construct (i.e., subsidiary decision-making autonomy) but also to develop measures for headquarters and subsidiary characteristics that we included as control variables in our model (see below). We selected 263 European subsidiaries of the 18 largest MNEs from 25 European countries (including, for example, Germany, the United Kingdom, Denmark and Sweden). The data for these large companies allow us to construct datasets with complete observations (cf. Rugman & Oh, 2010). Orbis also specifies the geographic location of the MNE itself and all its subsidiaries which allows us to determine the peculiarities of the particular home and host country environments in question.

3.3.2. Dependent variable: subsidiary decision-making autonomy

The dependent variable is the degree of subsidiary decision-making autonomy. Our data-collection approach does not allow to directly measure decision-making autonomy of subsidiary managers versus the headquarters as in a case-study or a survey-based research (as we will do in subsequent chapters). Nonetheless, we have been able to construct a proxy for subsidiary decision-making autonomy in this chapter based on the following three steps. First, we carefully reviewed the definitions and measures of subsidiary decision-making autonomy employed in leading subsidiary studies – i.e., Garnier (1982), Edwards et al. (2002), Hedlund (1981), Johnston and Menguc (2007), O'Donnell (2000), Vachani (1999), and White and Poynter (1984). We take the theoretical and empirical achievements in the extant

subsidiary literature as the point of departure for our proxy of subsidiary decision-making autonomy. This review resulted in a list of ten decision dimensions that primarily relate to business functions of subsidiaries – such as R&D, manufacturing, marketing and sales – but also include other potentially important management activities such as outsourcing, export-import or the organisation of the subsidiary establishment self (cf. Jindra et al., 2009).[5] Second, based on the Orbis database we determined whether or not a subsidiary performs a particular business function or activity. Thus, we created a dummy variable for each of the ten dimensions, that is, R&D = 1 if the subsidiary undertakes R&D activities, and 0 otherwise; Manufacturing = 1 if the subsidiary undertakes manufacturing activities, and 0 otherwise; Marketing = 1 if the subsidiary undertakes marketing activities, and 0 otherwise; Sales = 1 if the subsidiary undertakes sales activities in the domestic market, and 0 otherwise; Market scope = 1 if the subsidiary serves foreign markets, and 0 otherwise; Network = 1 if the subsidiary engages in network activities within the MNE, and 0 otherwise; Outsourcing = 1 if the subsidiary engages in outsourcing activities, and 0 otherwise; Cooperation = 1 if the subsidiary cooperates with external organizations, and 0 otherwise; Export-import = 1 if the subsidiary engages in export and/or import activities, and 0 otherwise; Subsidiary establishment = 1 if the subsidiary has its own subsidiary, and 0 otherwise.

Third, we summed the scores of the ten different dummies into one overall construct. We used this construct – that ranges from 0 to 10 – as the proxy for the degree of subsidiary decision-making autonomy. There are three additional reasons that support the use of this construct as the overall proxy for subsidiary decision-making autonomy rather than, e.g., individual dimensions separately. Firstly, it stands to reason that the more business functions or activities a subsidiary performs, the higher its decision-making autonomy will

[5] White and Pointer (1984), for example, classify the decision-making autonomy of a subsidiary in three categories: market scope, product scope and value added scope. Market scope is the range of geographic markets available to the subsidiary, with market scope being broad when a subsidiary serves not only a domestic market but also foreign markets. Product scope is the latitude exercised by a subsidiary's business with regard to product line extensions and new product areas. The value added scope of the subsidiary will be limited when economies of scale are large, tariffs are low and customer acceptance of a globally standardized product is high. Therefore, value added scope refers to the range of ways in which a subsidiary adds value, whether through development, manufacturing or marketing activities. Value added scope is broad when the subsidiary is not limited to the manufacturing or marketing of established products but also has the capability to develop new products and processes.

be. A wide range of business functions implies greater managerial complexity and specialization opportunities for a subsidiary which will be translated in greater decision-making autonomy. Secondly, we performed exploratory factor analysis and cluster studies on the ten dimensions. These results showed that no sub-dimensions of decision-making autonomy exist. Thirdly, we estimated Logit and Probit models for each separate dimension. It might be that a subsidiary receives decision-making autonomy for a single dimension and not for (all) others which is then masked in a summed scale. These estimates offered no significant results. The same applies to models in which we – despite the factor and cluster analyses – grouped dimensions into two or three separate scales for decision-making autonomy. Again, no significant results appeared. Taken together, this supports the use of our proxy for subsidiary decision-making autonomy.

3.3.3. Independent variables

We measured the first explanatory variable – the home country institutional effect – with a dummy variable. As mentioned above, studies in the national business system approach make a distinction between LMEs (e.g., the United Kingdom, Ireland) and CMEs (e.g, Germany, Japan). The classification of the countries is taken from Hall and Sockice (2001). We code 1 if the subsidiary belongs to a multinational corporation whose headquarters is located in a CME, and 0 otherwise (hence, if the subsidiary belongs to a multinational corporation whose headquarters is located in an LME). We also measured the second explanatory – the host country institutional effect – with a dummy variable. We code 1 if the subsidiary is located in a CME country, and 0 otherwise.

3.3.4. Control variables

We include two sets of control variables in our model. Although our sample includes the largest European MNEs there is, of course, variation in MNE characteristics that need to be accounted for. The first set of control variables accounts for MNE characteristics, in particular the degree of product diversification and company size (Garnier, 1982; Gates &

Egelhoff, 1986; Vachani, 1999). First, MNE decentralization can be positively associated with product diversification.[6] That is, the greater the degree of product diversification of MNEs, the more the subsidiary management by MNEs becomes complex and more difficult to control, enabling their subsidiaries to assume more decision-making autonomy (Gates & Egelhoff, 1986; Vachani, 1999). The degree of product diversification is measured by the number of products to be counted through product codes from the annual reports of the subsidiaries. Second, increasing size of the parent company may lead to an increase in the decision-making autonomy of local managers because size leads to more decentralized structuring of activities which then facilitates decision-making autonomy (Garnier, 1982; Gates & Egelhoff, 1986; Goehle, 1980; Hedlund, 1981). The size of multinational firms is measured by the total number of employees of the MNE.

The degree of subsidiary decision-making autonomy is also influenced by subsidiary characteristics. The second set of control variables accounts for these, in particular subsidiary age, economic performance, extent of ownership and subsidiary size. First, we assert that after several years of operation subsidiaries are allowed more decision-making autonomy than those with little experience because subsidiaries that have long been dependent on the multinational firm will have well-established connections with local stakeholders and extensive local experience. Thus, older subsidiaries are expected to be more autonomous than subsidiaries that have had a shorter affiliation with their foreign parent company (Chiao & Ying, 2013; Fenton-O'Creevy et al., 2008; Luo, 2006; Taggart & Hood, 1999; Young & Tavares, 2004). The age of the subsidiary is measured as the number of years since the subsidiary was founded. Second, it can be expected that successful local subsidiary managers will enjoy more decision-making autonomy than those who are less successful. Good company performance by the subsidiary within an MNE can provide local managers with greater bargaining power, even when the company seeks to use an imposed and centralized approach to develop an increasing global standardization of local practices. Subsidiaries with poor performance do not have the power to resist the implementation of an MNE's global strategy (Ambos et al., 2011; Björkman & Piekkari, 2009; Geppert &

[6] In a similar vein, Bartlett and Goshal (1989) relate decision making power to the nature of the product. This information, however, was not available in the Orbis dataset.

Williams, 2006). The economic performance is measured as the subsidiary's profit rate (in terms of a percentage) relative to that of the whole MNE, representing whether the subsidiary performs better or worse than any other across the whole MNE. Third, the extent of subsidiary ownership cannot be ignored in our thinking about subsidiary decision-making autonomy. It is defined as the equity holding authority of an owned subsidiary by the parent company. In cases of majority ownership, there are more chances of control and direction than in joint venture and minority ownership situations where the interests and resistance of local partners have to be taken in consideration. Furthermore, a majority ownership reflects a commitment of resources and a governance mechanism to control spill-over risks of firm-specific knowledge that creates sustainable competitive advantages (Chan & Makino, 2007; Männik, 2006). The extent of ownership of a subsidiary is measured by the percentage of the local shareholders' ownership of the subsidiary. Fourth, the size of the subsidiary is important because increasing size will offer increasing tangible (e.g. capital) and intangible resources (e.g. managerial talent and knowledge) that the MNE can use to obtain sustainable competitive advantages provided that they are inimitable, rare, causally ambiguous and unique (Dierickx & Cool, 1989). We account for a non-monotonic relationship between subsidiary size and decision-making autonomy because as a small subsidiary builds up its resources, it becomes less strongly tied to the MNE and its decision-making autonomy increases. However, after a cut-off point a subsidiary becomes larger its role within the MNE becomes greater and the parent company increasingly controls its decision-making autonomy (Hedlund, 1981; Johnston, 2005; Johnston & Menguc, 2007). The size of the subsidiary is measured in terms of the number of employees of the subsidiary.

The final control variable in our model is the relatedness of the home and the host countries because we focus on European MNEs. It is defined in terms of the level of similarity between the business environment in the parent company's country of origin and the country where the subsidiary is located. In fact, if this similarity level is high, the head office managers of MNEs are able to use their knowledge to control foreign subsidies, while head offices depend on the local knowledge of foreign subsidiary managers in operating a local business where the similarity is low (for example, Edwards et al., 2002; Erramilli & Rao, 1990). Moreover, the external environment and the host-country environment determine the

role of the MNE subsidiary, including its decision-making autonomy (Benito et al., 2003). Thus, we would expect that if the home and the host countries have similar business environments, the decision-making autonomy of the subsidiary will be low, and if there is little similarity the decision-making autonomy will be high. The relatedness of the host and home countries is measured by a dummy variable. We code 1 if both the home and the host countries are highly integrated national business systems (i.e., countries A and B are both LMEs or both CMEs), and 0 if the home and the host countries belong to different national business systems (i.e., country A is a LME and country B is a CME and vice versa). Again, the classification of the countries is derived from Hall and Soskice (2001). In Chapter 4 we will make a more elaborate distinction between differences in business environments.

3.3.5. Method

We apply negative binomial regression techniques to estimate the significance of the hypothesized determinants of subsidiary decision-making autonomy. The dependent variable is a discrete counting measure. Hence, we start from the assumption that decision-making autonomy follows a Poisson distribution. The Poisson model, however, imposes the restriction that the conditional mean of the dependent variable is equal to its variance. The negative binomial regression model generalizes the Poisson model by introducing an individual unobserved effect into the conditional mean, thus allowing for over-dispersion in the data (i.e., variance exceeding the mean). Extensive experimentation using both Poisson and negative binomial approaches revealed that the Poisson procedure was not suitable for our dataset. Therefore, we only report and discuss the results from the negative binomial model.

We used the robust Quasi-Maximum Likelihood estimation procedure using E-views, since this produces more consistent estimates of the parameters of a correctly specified conditional mean than the Maximum Likelihood estimation procedure does, even if the distribution is incorrectly specified (cf. Santos Silva & Tenreyro, 2006).[7] Finally, we

[7] We also applied OLS estimation because most empirical studies in the field apply OLS. The regression results for both estimation methods are virtually the same. In fact, the estimated coefficients of the explanatory variables from the OLS model

calculated the marginal effects at the mean values of the explanatory variables. These marginal effects can be used to obtain the economic meaning of the explanatory variables (see Sanders & Carpenter, 1998).[8]

3.4. Empirical results

Means, standard deviations and correlations are provided in Table 3.1. Results from the negative binomial regression analyses are summarized in Table 3.2. In preparing the data for the regression analysis, we performed the usual tests to obtain reliable estimates (Hair et al., 2006). The latter yielded satisfactory results: neither heteroskedasticity nor non-normality is an issue. The maximum value of the correlation coefficients is 0.35, which is far below the threshold value of 0.80 indicating that there are no issues with multicollinearity. We additionally tested for possible biases caused by collinearity among variables by calculating the variance inflation factor (VIF) for each of the regression coefficients. The maximum VIF value is 3.85 and thus well below the cut-off value of 10 recommended by Neter et al. (1985). The regression results are therefore reliable and unbiased.

Table 3.2 reports the results of the negative binomial regression analyses. These regression results offer two conclusions. First, the various fit parameters show that our models fit the data increasingly well. Model 1 is a model with control variables and a constant only. In Model 2, the main effects were included. The adjusted R-square improves for Model 2 compared to Model 1 justifying the inclusion of our key variables. Concerning the main effects, the empirical results strongly support Hypothesis 1 which predicts that the home country environment of multinational firms shapes their overall strategy concerning the decision-making autonomy of subsidiaries. Subsidiaries with headquarters located in

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are equal to three times those of the negative binomial regressions. This is perfectly in line with the statistical expectations for these models. Our empirical results are robust and do not depend on the statistical method that is used. Given the scale of the dependent variable we discuss the results with reference to the negative binomial regression estimates.

[8] The Poisson regression model is: $\hat{Y}_i = e^{\beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \beta_4 X_{i4} + \beta_5 X_{i5} + \beta_6 X_{i6} + \beta_7 X_{i7} + \beta_8 X_{i8} + \beta_9 X_{i9} + \beta_{10} X_{i10}} + \varepsilon$

Taking the logarithm of both sides, we have:

$\text{Ln}Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \varepsilon$

We estimated the coefficient of i^{th} variable through derivative this equation with respect to i^{th} X, and thus obtained:

$\hat{\beta}_i Y = \frac{\delta Y_i}{\delta X_i}$ with the elasticity $\hat{\beta}_i X_i = \frac{\delta Y_i}{\delta X_i} \frac{X_i}{Y_i}$

CMEs are characterized by higher levels of decision-making autonomy than subsidiaries with HQs in LMEs ($\beta = 0.12$, $p < 0.01$). Hypothesis 2 is also supported ($\beta = 0.09$, $p < 0.05$). This result emphasizes the important role played by the national business environment in the host country. The degree of subsidiary decision-making autonomy is higher for subsidiaries located in CMEs than in LMEs.

Table 3.1. Descriptive statistics and correlation coefficients (n = 263)[1]

	Variable	Mean	S.D.	Min.	Max.	1	2	3	4	5	6	7	8	9	10
1.	Degree of subsidiary decision making-autonomy	3.25	0.95	1.00	6.00										
2.	Home country is CME	0.70	0.46	0.00	1.00	0.13									
3.	Degree of product diversification	9.08	7.05	0.00	50.0	–0.11	–0.09								
4.	Host country is CME	0.73	0.44	0.00	1.00	0.18	0.04	-0.11							
5.	Parent-company size (10,000)	0.14	0.08	0.01	0.25	0.14	–0.35	0.04	0.005						
6.	Subsidiary age (log)	3.15	0.81	1.10	4.83	0.58	0.07	–0.09	0.07	0.10					
7.	Economic performance	0.25	0.06	0.01	0.66	0.06	0.10	–0.07	0.02	–0.13	–0.01				
8.	Extent of ownership	0.91	0.24	0.10	1.00	0.12	–0.20	–0.01	0.002	0.14	–0.09	–0.30			
9.	Subsidiary size (log)	6.55	10.0	0.13	59.2	0.15	–0.10	0.12	–0.12	0.12	0.10	–0.08	0.09		
10.	Subsidiary size squared	143.3	434.8	0.017	3504.0	0.12	–0.12	0.10	–0.07	0.10	0.10	–0.06	0.08	0.93	
11.	Home and host same business system	0.44	0.50	0.00	1.00	0.04	–0.30	0.03	0.34	0.17	–0.04	–0.08	0.16	–0.04	–0.05

Notes: (1) Correlations above 0.12 are significant at $p < 0.05$.

Table 3.2. The determinants of subsidiary decision-making autonomy of European MNEs[1]

	Model 1	Model 2	Marginal effect
Constant	0.24**	0.18	
	(0.11)	(0.14)	
Main effects			
Home country is CME (not LME)		0.12**	0.34**
		(0.04)	(0.12)
Host country is CME (not LME)		0.09*	0.31*
		(0.04)	(0.11)
Control variables: MNE characteristics			
Degree of product differentiation	−0.003	−0.01	−0.03
	(0.002)	(0.01)	(0.01)
Company size (10,000)	0.18	0.41	1.38
	(0.21)	(0.23)	(0.70)
Control variables: Subsidiary characteristics			
Subsidiary age	0.21**	0.20**	0 .65**
	(0.02)	(0.02)	(0.05)
Economic performance	0.001**	0.01**	0.002**
	(0.002)	(0.02)	(0.001)
Extent of subsidiary ownership	0.24**	0.26**	0.86**
	(0.07)	(0.07)	(0.21)
Subsidiary size (log)	0.008*	0.01*	0.03*
	(0.004)	(0.04)	(0.01)
Subsidiary size (log) squared	−0.003	−0.01	−0.03
	(0.000)	(0.07)	(0.000)
Control variables: Institutional relatedness			
Home-host both same business system	−0.02	−0.01	−0.03
	(0.02)	(0.03)	(0.10)
Model Summary			
N	263	263	
Adjusted R-Square	0.39	0.43	
Log likelihood		−606.3	

Notes: (1) White's heteroscedasticity – consistent standard errors are given in parentheses. * $p < 0.05$, ** $p < 0.01$.

Second, the results for the control variables indicate that in particular the age of the subsidiary ($\beta = 0.20$, $p < 0.01$), its economic performance ($\beta = 0.01$, $p < 0.01$) and the extent of ownership ($\beta = 0.26$, $p < 0.01$) increase subsidiary decision-making autonomy.[9] Our results for the control variables are consistent with other empirical studies on subsidiary decision-making autonomy. While some previous studies have provided inconclusive and/or no significant results, none have contradicted the positive relationship supported by the present study. For instance, a significant positive relationship between the degree of decision-making autonomy and the age of subsidiary coincides with the findings of Ambost et al. (2011), Chiao and Ying (2013), and Luo (2006), while the finding of Fenton-O'Creevy (2008)

[9] For some of the variables in the model the variation is low in particular with respect to subsidiary ownership. In a robust test, we excluded subsidiary ownership. This does not affect the results.

was inconclusive. Table 3.2 also reports that the hypothesized non-linear relationship between subsidiary size and decision-making autonomy – suggested by Hedlund (1981) and Johnston and Menguc (2007) is not supported (with $\beta = 0.01$, $p < 0.05$ for the main term and $\beta = -0.01$, non-significance for the squared term). This means that subsidiary size has a positive relationship with subsidiary decision-making autonomy. Finally, the result rejects the hypothesis that home-host both same business system is negatively associated with subsidiary decision-making autonomy.

3.5. Discussion and conclusions

Studies on subsidiaries have evolved over time with the research strategy becoming specifically concerned with headquarters-subsidiary relationships and subsidiary roles. Consequently, an important aspect of recent research is the degree of subsidiary decision-making autonomy. Our results emphasize that the institutional environment – both the home and the host - in combination with parent-company and subsidiary characteristics are important drivers of the decision-making autonomy of subsidiaries. Although individual characteristics have been addressed elsewhere, ours is one of the first that explicitly focuses on the institutional environment. Subsidiaries of MNEs in CME countries can be argued to have a relatively local focus and are therefore subject to decentralized and negotiated control. The head office management representatives in these MNEs are in favour of respecting the decision-making autonomy of local subsidiaries because of their understanding of local markets. MNEs (for example, German, Japanese) applying decentralized and negotiated strategies to their subsidiaries can be argued to delegate much decision-making autonomy to their subsidiaries, while MNEs from LMEs (for example, British, American) applying centralized strategies to subsidiaries are – ceteris paribus - likely to restrict the autonomy of their subsidiaries. Next to this home country effect, we also find support for a similar effect in host countries, with subsidiaries located in CMEs having higher levels of decision-making autonomy than subsidiaries in LMEs.

The result rejects the argument of Ohmae (1990) and others, which assumes that MNEs are becoming "placeless", as national identity is replaced by the commitment to a

single unified global mission in global corporations (Ohmae, 1990). This study suggests that MNEs have distinctive strategies for different subsidiaries. Indeed, subsidiaries in highly integrated NBSs such as CMEs enjoy more decision-making autonomy than those in NBSs such as LMEs with relatively low levels of integration.

We would like to mention that the findings of this chapter are consistent with the "sociopolitical" approach which emphasizes the role of the power, politics and strategic choices of local management in effecting the implementation of the global strategies of MNEs. First, the performance of a subsidiary is positively associated with its decision-making autonomy. In fact, the outstanding performance of a subsidiary provides its managers with huge bargaining power, which allows them to actively resist the imposition of global strategies by the parent firm and protect local practices (cf. Geppert & Williams, 2006). Second, the size of the subsidiary is positively associated with its decision-making autonomy. In fact, parent firms suffer various difficulties in directly controlling their large subsidiaries (Taggart & Hood, 1999) because larger subsidiaries usually reside in large markets and engage in several complex activities, such as R&D or innovation. This can be interpreted as a threshold point at which the subsidiary begins to establish greater decision-making autonomy and eventually loosens its dependence on head office.

Finally, our study finds no support for the effect of the same national business system both the home and host countries on degree of subsidiary decision-making autonomy. Thus, for this chapter, the difference in business environments between the parent company's country of origin and the country where the subsidiary is located is not a determinant of subsidiary decision-making autonomy. One possible explanation for this insignificant effect is the measure of overlap, which is based on a dummy. In Chapter 4 we use a set of continuous measures of home-host distance.

3.6. Limitations and future research

There are certain limitations to this study making us careful in interpreting our findings. First, in this chapter the level of subsidiary's business functions was used as a proxy for subsidiary decision-making autonomy. Although used by others as well, this is not a perfect

proxy for subsidiary decision-making autonomy. In fact, the measure may be picking up the scope and the level of autonomy. It would be better in future research to directly measure the degree of decision-making autonomy concerning specific business activities by subsidiary. This is in fact what we do in the next chapters. Second, this chapter only examines one factor concerning the characteristics of the host country – that is institutional environment. Several studies stressed that the control issues in the organizational network relationship between headquarters and subsidiary may be affected by distance between home and host countries (Wilkinson et al., 2008) and home-country characteristics (Gammelgaard et al., 2012b). We recommend that future research should take these factors into account. This is exactly what we do in the next chapter when we explore the relation between home-host distance and decision-making autonomy. Third, this chapter employed a cross-sectional dataset (in the year 2007) which raises limitations in relation to the generalization of the results. Birkinshaw (1996), for instance, developed the so-called "mandate life cycle framework" to describe the broad change in the roles of subsidiary units in MNEs. In this life-cycle framework, the role of a subsidiary changes across three periods: mandate gain, mandate development and mandate loss. Therefore, due to the changing role of subsidiaries over time, future research may apply panel data or time series in order to test the dynamics in the relationships between headquarters and subsidiaries. The decision-making autonomy of subsidiaries may also vary across developmental levels of foreign countries in which subsidiaries are located. For example, according to James and Anthony (1995), MNEs are more important for overall economic activity when the host and home countries are more similar in incomes, relative factor endowments and technologies. This means that an MNE from a developed country would have more room to develop in foreign countries with high development levels than in those with low development levels. Thus, the subsidiaries of this MNE found in developed countries would be granted more decision-making autonomy than those in developing countries. However, this chapter does not make a distinction with respect to the level of decision-making autonomy found in subsidiaries existing in developed as opposed to developing countries, nor does it examine which of the decision-making powers granted by MNEs are the most critical. These limitations provide

rich opportunities for further research, some of which we will address in the chapters that follow.

Chapter 4

The impact of distance on subsidiary decision-making autonomy

4.1. Introduction

Foreign subsidiaries have the potential to embed themselves within different types of knowledge networks, in order to accumulate their capabilities needed for innovation, thereby strengthening their sustainable competitive advantages (Cantwell & Mudambi, 2005; Phene & Almeida, 2008), and thus the whole multinational enterprise (MNE) group. This focus on subsidiary innovation has direct implications for the role of foreign subsidiaries, particularly regarding the distribution of decision-making autonomy in relationships between headquarters and subsidiaries. Subsidiaries with high levels of decision-making autonomy are able to respond to changing circumstances, develop local business networks, gain local market legitimacy thereby fostering creativity and new idea generation. Alternatively, to exclude the risk of subsidiaries not following corporate R&D strategy, headquarters will be inclined to take key decisions themselves ensuring that subsidiaries pursue the goals of headquarters. The latter is associated with lower levels of decision-making autonomy for subsidiaries (centralization) (Brooke, 1984; O'Donnell, 2000). In the context of MNEs crossing national borders, the distance between headquarters and subsidiaries complicates the above trade-off between centralization and de-centralization substantially.

International business theory clearly informs us that crossing borders implies a change of the context in which business is done (Hymer, 1976; Zaheer, 1995a). These contextual changes lead to a liability of foreignness for multinationals. An increased distance between home and host country contexts is of direct relevance to the question on the distribution of decision-making autonomy between headquarters and subsidiary. Theoretically, a larger distance is associated both with higher and lower levels of decision-making autonomy for subsidiaries. A larger distance arguably triggers the need for more direct control by headquarters, but also increases the importance of subsidiaries to be locally responsive. In this chapter we address the question how distance – conceptualized and measured as a multidimensional construct including economic, geographic, and cultural dimensions – affect the level of subsidiary decision-making autonomy, while controlling for MNE and subsidiary specific characteristics.

The previous chapter showed that home- and host country institutional environments are associated with the level of subsidiary's decision-making autonomy. In this chapter, we continue to explore whether home- and host country context affects subsidiary decision-making autonomy. In particular, we aim to study how distance between home- and host countries determines subsidiary's decision-making autonomy. Together with the preceding chapter, the theoretical arguments and empirical findings developed in this chapter provide new insights on the role of home- and host country context in the distribution of decision-making autonomy between the headquarters and the subsidiary.

Our hypotheses on how distance affects levels of decision-making autonomy are derived from two complementary theoretical perspectives often used in the context of studies on headquarters-subsidiary relationships: agency theory and business network theory. Agency theory (Eisenhardt, 1989; Jensen & Meckling, 1976) deals with bounded rationality resulting in information asymmetry between headquarters and subsidiaries that may create goal incongruence between the two sides of the relationship (O'Donnell, 2000; Roth & O'Donnell, 1996). This explains why headquarters implements control mechanisms and limits decision-making autonomy to ensure that the subsidiary aligns with the headquarters strategy (O'Donnell, 2000). Business network theory highlights the importance of local legitimacy for the performance of affiliates (Andersson & Holm, 2010; Ciabuschi et

al., 2011a; Forsgren et al., 2005; Forsgren, 2008). It assumes that headquarters predominantly suffers from accessing and obtaining local information and knowledge. This requires a decentralization rather than a centralization of decision-making autonomy (Andersson et al., 2007). These two theoretical perspectives are associated with two different predictions on the nature of the relationship between distance and subsidiary decision-making autonomy.

We test our distance hypotheses on a dataset of 170 subsidiaries located in five Central and Eastern European countries: the Czech Republic, Hungary, Poland, Romania, and the Slovak Republic. These countries are relevant because they have been entered by MNEs worldwide following the support for foreign direct investments of these countries and new market opportunities due to liberalization policies of these transition economies. The 170 subsidiaries serve headquarters in twenty-one different home countries resulting in 55 country pairs. Controlling for multinational and subsidiary specific characteristics, and for industry and country characteristics, we find that geographic, economic and cultural distance are associated with lower levels of subsidiary decision-making autonomy. Our study re-affirms the central role of distance in international business research. Our study also implies that business processes for which local responsiveness and subsidiary decision-making autonomy are required are complicated when contextual distance between home and host countries increases. Our finding that distance is generally associated with lower levels of subsidiary decision-making autonomy means that multinationals face a tension: distance to the host market has been argued to increase the need to be locally responsive for which subsidiary decision-making autonomy helps (especially in the case of innovation, more on that in the next chapter), but distance – as our study shows - is at the same time associated with lower levels of subsidiary decision-making autonomy.

4.2. Background

4.2.1. Distance

Firms and managers are faced with additional challenges when crossing borders and becoming operationally active in a host country context that differs from their home

country. Although the change in context might in principle also relate to intra-country variation, IB research is concerned with firms crossing national borders and the development of economic activities in other nations (Beugelsdijk, 2011). In order to explore and exploit the location specific advantages abroad, firms and managers have to overcome the distance between the home and the host country. These contextual differences – driven by the geographic, cultural, institutional and economic differences – are associated with a liability of foreignness (Hymer, 1976; Zaheer, 1995), meaning that internationalizing firms incur costs that domestic firms do not have. As the contextual differences between the home and the host country increase, the liability of foreignness is generally argued to increase as well.

The role of contextual differences has a long history in IB, and is fundamentally related to the concept of psychic distance. Psychic distance refers to perceptions of managers and was originally defined as "the sum of factors" contributing to perceived differences in home and host country contexts following "differences in language, culture, political systems, level of education, level of industrial development, etc." (Johanson & Wiedersheim-Paul, 1975: 308). The concept of psychic distance puts an emphasis on the extent to which environmental differences between home and host countries present information flows and generate barriers to learning about these markets (Dikova, 2009; O'Grady & Lane, 1996). For that reason, firms tend to select overseas markets in accordance with the psychic distance from the home country (Johanson & Vahlne, 1977). A lower psychic distance means that a country is more likely to be selected, and vice versa. The greater the psychic distance between home and host countries, the more difficult it is to collect, analyze and correctly interpret information about these differences (Håkanson & Ambos, 2010).

Over the years, the importance of psychic distance for IB theory and MNE practice has been consistently reported (see, for example, Boyacigiller, 1990; Brewer, 2007; Dow & Karunaratna, 2006; Evans et al., 2008; Nordstrom & Vahlne, 1994; O'Grady & Lane, 1996). Psychic distance matters for subsidiary performance (Dikova, 2009; Evans & Mavondo, 2002; O'Grady & Lane, 1996), the selection of foreign markets (Stottinger & Schlegelmilch, 1998; Whitelock & Jobber, 2004) and a firm's entry strategy (Ellis, 2007, 2008). Notwithstanding the importance of psychic distance, the theory focuses on perceptions of managers per se (and

hence, requires ditto measures to address these). Such data is often not available, at least not at a large scale. Very often, IB researchers use distance measure such as economic, language, geographic and cultural distance, also referred to as *drivers* of psychic distance (Dow & Karunaratna, 2006). Although managerial perceptions of distance are ideally used to proxy for such contextual differences, the lack of such measures on a large scale leads scholars to use sets of (secondary) distance measures taken from databases such as the World Bank (for economic distance), Hofstede (1980) and Globe (House et al., 2004) (for cultural distance), and CEPII (for geographic distance).

4.2.2. Subsidiary decision-making autonomy

Research on the headquarters-subsidiaries relationship is a classic research theme in IB (Dunning & Lundan, 2008), and received a substantial push in recent years (Birkinshaw & Hood, 1998; Birkinshaw et al., 1998). It is widely acknowledged that subsidiary decision-making autonomy plays a pivotal role in the relationship between headquarters and subsidiaries (Asakawa, 1996, 2001; Garnier, 1982; Gammelgaard et al., 2012a, b; Gates & Egelhoff, 1986; Hedlund, 1981; Johnston & Menguc, 2007; O'Donnell, 2000 for comprehensive reviews). Research on the determinants of subsidiary decision-making autonomy has focused on MNE and subsidiary characteristics (Fenton-O'Creevy et al., 2008; Schüler-Zhou & Schüller, 2013; Simões et al., 2002; Taggart & Hood, 1999; Vachani, 1999; Williams & Van Triest, 2009), industry peculiarities (Birkinshaw & Hood, 2000; Männik et al., 2005) or the embeddedness of the subsidiary in the host country (Ambos et al., 2011; Chiao & Ying, 2013). For example, several studies report that subsidiary innovation (measured by, for example, R&D intensity) is positively related to subsidiary decision-making autonomy. This decision-making autonomy enhancing effect of innovative orientation is explained by the need to quickly respond to local market forces and preferences (Simões et al., 2002; Taggart & Hood, 1999). Other studies show that decision-making autonomy is related to the entry mode chosen. A greenfield entry mode, for instance, is negatively associated with decision-making autonomy (Gammelgaard et al., 2012b; Luo, 2006; Slangen & Hennart, 2008). Birkinshaw and Hood (2000) found that

subsidiaries in leading-edge industries are more autonomous as well as more locally embedded and more internationally oriented than subsidiaries in other sectors. Subsidiaries in high technology industries develop cooperative and close ties with suppliers and customers, experiment with new ideas and transfer some of their learning to headquarters, all of which require high levels of decision-making autonomy (Männik et al., 2005). Despite the crucial role played by distance in IB research in general, no study has explicitly addressed how distance between home and host countries affects subsidiary decision-making autonomy. In what follows we develop hypotheses on exactly this relationship, thereby combining distance research with headquarters-subsidiary research.

4.3. Hypothesis development

4.3.1. Agency theory and subsidiary decision-making autonomy

Agency theory sheds light on the potential negative effects of distance on subsidiary decision-making autonomy. High levels of distance between home and host countries are likely to increase agency problems in the headquarters-subsidiary relationship and therefore increase the control of headquarters over subsidiaries (that is, decrease the level of subsidiary decision-making autonomy) (Chang & Taylor, 1999). Different explanations exist for a negative relationship between distance and decision-making autonomy. First, a large distance between two groups of individuals in a business network increases the cost of interpreting information flows between parties and also increases the risks of misinterpretation (Boyacigiller, 1990). It means that the costs of doing business in foreign countries increase with distance, or at least accelerates at a rate higher than the benefits do. As distance increases, subsidiaries face difficulties in being locally responsive because more specific information from the headquarters is required to effectively coordinate local R&D, production or marketing (Bartlett & Ghoshal, 1989).

Second, subsidiary managers will have an information advantage over their headquarters management (Vachani, 1999) when differences in characteristics between headquarters market and the market of foreign subsidiary increase. This implies that agency

problems arise when subsidiary managers make self-interested decisions that are not congruent with those desired by the headquarters. Furthermore, with increased distance, complete and accurate information about subsidiaries' performance becomes more difficult and expensive to attain, and subsidiary activities thus become more difficult to interpret (Roth & O'Donnell, 1996). Agency problems occur because subsidiary managers have greater specialized knowledge regarding the influence of the local environment and strategic context on its task performance (Gomez-Mejia & Balkin, 1992). In essence, as distance increases, a headquarters becomes more dependent on the subsidiary for information that is either not directly available to the headquarters or extremely costly to acquire. Thus, this information asymmetry occurring from distance increases the agency problem in the headquarters-subsidiary relationship. A crucial note that the argumentations of agency theory on problems in the headquarters-subsidiary relationship stem from subsidiary side, not the headquarters and these argumentations are sticked in central decisions made by headquarters. Hence, several scholars stated that to reduce the agency problem headquarters takes decisions over their foreign subsidiaries (Chang & Taylor, 1999; O'Donnell, 2000).[10]

Third, high levels of distance are likely to constitute a barrier to headquarters learning about a foreign environment not only because there are differences with how business is conducted locally, but also because it impedes information flows which headquarters attempt to obtain (Gregersen & Hite, 1996; Roth & O'Donnell, 1996). These constraints result from the fact that headquarters faces high levels of uncertainty (Evans & Mavondo, 2002) and generic management difficulties in distant markets (Ellis, 2008). It is the root cause of inconsistencies in cognitive firm frameworks. Consequently, distance between home and host countries increases uncertainty, which increases agency problems in the headquarters-subsidiary relationship. To reduce the agency problem, the headquarters will take decision-rights over the subsidiaries for ensuring the interests of the headquarters (Nohria & Ghoshal, 1994).

[10] This prediction is also in line with transaction cost theory: uncertainty, high distance, high transaction cost, and control.

Taken together, the arguments above suggest that distance between home and host countries increases information asymmetry, which increases agency problems in the headquarters-subsidiary relationship. To resolve these agency problems, the headquarters cannot relinquish decision-rights to the subsidiaries since the local interests of subsidiaries may not always be in line with those of the headquarters (Nohria & Ghoshal, 1994). Therefore, the headquarters will closely monitor and supervise the behavior of a subsidiary, which limits the ability and the incentives of subsidiaries for engaging in self-interested behavior.

To summarize, in line with agency theory, it can be argued that when distance between home and host countries increases, agency problems arise increasing the need to control subsidiaries and hence, lowering subsidiary decision-making autonomy. We propose the following hypothesis:

Hypothesis 1: A larger distance between home and host countries is associated with lower levels of subsidiary's decision-making autonomy.

4.3.2. Business network theory and subsidiary decision-making autonomy

Business network theory offers an alternative perspective on distance and decision-making autonomy (Andersson et al., 2007; Andersson & Holm, 2010; Ciabuschi et al., 2011a; Forsgren et al., 2005; Forsgren, 2008). Following business network theory, it can be argued that increasing distance between home and host countries is likely to enhance subsidiary decision-making autonomy. Several explanations exist for a positive relationship between distance and decision-making autonomy.

First, each subsidiary operates in its own unique task environment in a host country, which constrains or determines the activities of that subsidiary. In order to survive, subsidiary managers need to conform and adapt to the rules, norms and belief systems prevailing in their local business environment (DiMaggio & Powell, 1983) – a process also referred to as normative rationality (Oliver, 1997). Accordingly, to increase a subsidiary's

ability to understand its local business environment (Birkinshaw et al., 1998), and to obtain local business legitimacy (Bartlett & Ghoshal, 1989; Prahalad & Doz, 1987), business network theory suggests that headquarters will delegate decision-making autonomy to distant subsidiaries to increase local legitimacy.

Second, first-hand knowledge of local circumstances is a crucial competence within an MNE network because it allows subsidiaries to develop and adopt new products, processes or administrative systems locally using their own technical and managerial resources to respond to local circumstances (Forsgren, 2008). High levels of uncertainty accompany subsidiaries operating in a particular business network in distant markets from the MNE point of view (Dikova, 2009; Evans & Mavondo, 2002). Headquarters will decentralize decisions to subsidiaries for the purpose of reducing uncertainty. As a result, the subsidiary can undertake more extensive research and planning, which improves performance (Evans & Mavondo, 2002; Evans et al., 2008). To sum up, greater distance between home and host countries increases the cost of doing business and the level of uncertainty for obtaining local resources and legitimacy. Therefore, headquarters will decentralize decision-making autonomy to subsidiaries. Hence, we hypothesize:

Hypothesis 2: A larger distance between home and host countries is associated with higher levels of subsidiary's decision-making autonomy.

Whereas agency theory suggests a negative relationship, business network theory suggests a positive relation exists between subsidiary decision-making autonomy and distance. In what follows, we describe our data and method to test this relationship empirically.

4.4. Research methods

4.4.1. Data sources, surveys and samples

To test our hypotheses, we used data from a unique multi-country, multi-industry database. We constructed the database from different sources of information. Our first data source was the 2011 subsidiary-level survey of MNE subsidiaries conducted in the Czech Republic, Hungary, Romania, Poland, and the Slovak Republic by the Institute for Economic Research Halle (IWH). This 2011 IWH survey database offered us the opportunity to measure the dependent variable (i.e., the decision-making autonomy of subsidiary) as well as the different control variables that are included in our model (concerning the characteristics of the headquarters, subsidiaries, industries and countries, see below).

The 2011 IWH survey database is part of a larger project aimed to systematically collect information about innovation activities and the role of foreign investors in former Eastern and Central European (CEE) countries. These countries are located in proximity to large European markets, and most transition economies embarked on a comprehensive privatization process at time when FDI flows were starting to peak on a global scale. Yet, in distinction to many developing countries, the CEE economies started out with a long history of industrialization and a relatively well educated work force (Stenphen & Jindra, 2005). In fact, since the early 1990s, the transitional countries in CEE – including the Czech Republic, Hungary, Romania, Poland, and the Slovak Republic – have been characterized by institutional change from a planned to a market economy. This process entailed policies targeted at privatization, liberalization and macroeconomic stabilization (Gabrisch & Hölscher, 2006). Post-communist countries also quickly integrated with the global, and in particular West European, economy via international trade and foreign direct investment. This process was influenced significantly by MNEs with regard to firm restructuring (Djankov & Murrell, 2002), private enterprise R&D (Kalotay & Hunya, 2000; UNCTAD, 2005), export competitiveness (Rugraff, 2006; UNCTAD, 2002), and productivity growth (Jindra, 2006; Schadler et al., 2006). Differences in the developmental experience of individual transition economies are largely explained by initial conditions, macroeconomic

policies and structural reforms (Berg et al., 1999). For example, several studies showed that foreign subsidiaries are deeping trade linkages; that direct effects of FDI materialize in significantly higher productivity compared to domestic firms (Giroud et al., 2012; Jindra et al., 2009; Meyer, 1998; Meyer & Peng, 2005; Resmini, 2000).

The overall population of subsidiaries from which the IWH sample is taken from Orbis (broken down per ownership for each country) and consists of foreign-owned manufacturing and service subsidiaries located in the five CEE countries. The selection of these countries in economic transition balances country size, geographic location, and the level of economic development that varies strongly in this region. The population includes different types of foreign investors such as pension funds, banks, foundations, individuals, families, or any combination of these different types of owners. The surveys in the various countries were implemented by means of computer assisted telephone interviews (CATI) and executed by the Institute for Applied Social Sciences (IFAS). IFAS is an research institute specialized in doing surveys in CEE countries. A CATI method helps to foster response rates in these CEE countries where managers are less experienced to answer questions from a survey. In order to further increase response rates, the directors of the subsidiaries were first invited to participate in the research via a letter or a brief telephone call. They then received information about the purposes of the survey as well as data confidentiality per fax and/or e-mail upon request. The questionnaire was the same in all countries. It was first tested for coherency to at least four pre-tests per country before being submitted to the subsidiaries between 6 August and 3 September 2009. The final questionnaire required 15 minutes on average for completion. The IFAS interviewers received intensive training by IWH regional experts concerning innovation and business activities in CEE countries. The interviews were conducted by native speakers from each of the countries under observation. The 2011 IWH survey used selection question for various parts of the survey implying that very few companies answered all questions in the survey.

The IWH database for our research includes 637 observations in the five CEE countries. Our sample in this chapter and in next chapters is derived from this IWH database. After correction for missing values because of incomplete responses, the useable final sample in this chapter is 170 observations. This implies that out of the total observation,

170 subsidiaries were willing to complete the questionnaire, leading to a response rate of 26.69 percent of 637 subsidiaries that were contacted. The response rate was the highest in Poland (83 observations, 48.83 percent) followed by the Czech Republic (32 observations, 18.82 percent), Romania (22 observations, 12.94 percent), Hungary (17 observations, 10.0 percent) and the Slovak Republic (16 observations, 9.41 percent).

With regard to industry breakdown, this sample contains firms from all industries at NACE 2 digit level. The sample includes manufacturing (NACE Rev.2: 05 to 39) and service industries (NACE Rev.2: 45-47, 49-53, 58-68, and 69-82). We performed statistical tests to discern whether or not there are differences in the distribution of enterprises ordered by firm size and industry. Chi-squared tests showed that there are no statistically significant differences both in terms of the number of employees and industry ($p = 0.26$ and $p = 0.32$, respectively).

Our other data sources are the Dow and Karunaratna (2006) and the Hofstede databases. These databases enabled us to measure a wide variety of distance characteristics, including language, religious and cultural distances between particular sets of countries. The IWH survey database enabled the identification of the country of origin (i.e., headquarters location) for each subsidiary. The subsidiaries were located in five CEE (host) countries. The headquarters of these subsidiaries were located in twenty-one different (home) countries. We were able to make 55 country pairs with 16 country pairs for Poland, 11 country pairs for the Czech Republic, 11 country pairs for Romania, 9 country pairs for the Slovak Republic, and 8 country pairs for Hungary (see Appendix 4A for more details). We used this information on country pairs to measure the different distance dimensions that are included in this study.

4.4.2. Dependent variable: subsidiary decision-making autonomy

Following leading studies on subsidiary decision-making autonomy (for example, Birkinshaw & Hood, 2000; O'Donnell, 2000) (see Appendix 4E), we determined the level of subsidiary decision-making autonomy by means of a particular questionnaire item (see Appendix 4B). We asked the director of the subsidiary to indicate to which extent

independent decisions for particular business activities were taken by the subsidiary or the headquarters. As shown in the Appendix, we asked them to do so for seven different business activities, each rated on a four-point Likert scale. The Cronbach's alpha for the decision-making autonomy of the seven business activities of 0.83 is satisfactory because it is substantially above the threshold value of 0.70 (Hair et al., 2006). A Principal Component Factor analysis showed that the seven business activities load on one factor (with one eigenvalue larger than 1, i.e. 3.51). We summed the individual scale items for this construct and used the aggregate measure of the level of subsidiary's decision-making autonomy in the analysis. The aggregated index ranges from a minimum of 7 to a maximum of 28: the higher the score of the index, the higher level of a subsidiary's decision-making autonomy. Note that this measure of decision-making autonomy differs from the one used in the previous chapter, as this one does not measure business functions, but actual decision making. We continue using this measure in the other chapters.

4.4.3. Independent variable: home-host country distance

Home-host country distance can be measured on many different dimensions. Home-host country distance is a multidimensional construct and its measurement a subject of ongoing debate (Prime et al., 2009). Our study uses the Dow & Karunaratha (D&K) (2006) database. This database presents various so-called drivers of psychic distance. The drivers of psychic distance are a solution to the lack of data for perceptual measures of distance, as is the case in the present study as well (for a discussion, see also Dikova, 2009). The Dow and Karunaratna (2006) measure of distance comprises macro-level factors identified by other distance researchers (Boyacigiller, 1990; Evans et al., 2000; Evans & Mavondo, 2002; Johanson & Vahlne, 1977). Language, religion, level of education, level of industrial development, political systems, geography, and culture are the most often used components

of distance (Håkanson & Ambos, 2010). We use these seven aspects as a measure of distance in our study.[11]

The first five dimensions (that is, differences in language, religion, education, industrial development and political systems) are based on Dow and Karunaratna's analysis of 120 country pairs. That is, based on the Dow and Karunaratna's (2006) database, we extracted the value for each of the 55 country pairs in our sample. A major language for a given country is defined as any language, which can be spoken by more than 20 percent of the population, or a language that holds a special official status within the country. The D&K value for language distance in our sample varies between –3.38 and 0.52, with low values indicating a small linguistic distance and high values indicating large linguistic distances between home and host countries. The second dimension concerns differences in the major religions between home and host countries. A major religion is defined as any religion to which more than 20 percent of the population claims an affiliation. Furthermore, within a major religion, only divisions that represent at least one quarter of that religion's adherents are considered to be relevant. The D&K value for religious distance in our sample varies between –1.29 and 1.27, with low values indicating a small religious distance between countries and high values indicating a large religious distance between home and host countries.

The third dimension concerns differences in the educational level between home and host countries. Differences in the educational levels between countries is measured by using three scales, i.e. the difference in the proportion of literate adults between home and host countries, the differences in the proportion of the population enrolled in second and third-level education. The D&K value for educational distance in our sample varies between –1.25 and 2.25, with low values indicating a small educational distance between home and host countries and high values indicating a large educational distance between home and host countries. The fourth dimension concerns differences in the industrial development between home and host countries. This dimension is measured by differences in the degree of industrial development between home and host countries through nine different aspects:

[11] We do not take time zone differences and colonial ties between home and host countries into account because i) time zone difference and geographic distance in our sample are highly correlated (r = 0.94), and ii) Central and Eastern European countries have no or very few colonial ties.

GDP per capita, the consumption of energy, vehicle ownership, the percentage of employment in agriculture, the percentage of GDP from manufacturing, the difference in the degree of urbanization, and the differences in the development of the communication infrastructures (newspaper, radios, telephones, and televisions per 1,000 population). The D&K value for industrial development distance in our sample varies between –1.78 and 1.78, with low values indicating a small industrial development distance between home and host countries and high values indicating a large industrial development distance between home and host countries. The fifth component concerns differences in the political system between home and host countries. Two distinct aspects measure the difference in the political systems between home and host countries: the degree of democracy and the political ideology of the group in power. The D&K value for political system distance in our sample varies between –0.50 and 2.04, with low values indicating a small political system distance between home and host countries and high values indicating a large political system distance between home and host countries.

The remaining two distance dimensions are cultural and geographic distance. Concerning geographical distance, we obtained information on the countries in which the subsidiary and the headquarters were located, but not on their exact location within each country (in order to maintain survey anonymity). We therefore measured geographical distance as the logarithm of the kilometer difference between the capitals (Håkanson & Ambos, 2010). The geographical information was obtained from the *Centre d'etudes prospectives et d'information internationals* (CEPII, 2012), which provided the pair-wise country kilometer distance for all the country capital pairs in our sample. The geographic distance measure ranges between 4.08 and 9.65, with higher scores corresponding to higher geographic distance. With regard to cultural distance, following the previous studies (e.g., Dikova, 2009; Dow & Karunaratna, 2006; Håkanson & Ambos, 2010) we used the six updated cultural dimensions of Hofstede and applied the formula suggested by Kogut and Singh (1988) to measure cultural distance for each of the country pairs in our sample. The composite measure for cultural distance ranges between –1.28 and 4.13, with higher scores corresponding to higher cultural distance between home and host countries.

Before testing our hypotheses, we performed a factor analysis on the seven dimensions of distance to discern whether or not they cluster on different dimensions. A Principal Component Factor analysis with varimax rotation (see Appendix 4C) report two factors with eigenvalues larger than 1 (i.e., 2.47 and 1.68 for factor 1 and factor 2, respectively). Educational, industrial development and political system distance between home and host countries are clustered into the first factor and the other dimensions are clustered into the second factor. For the first factor, the Cronbach's alpha is 0.81, which satisfies the threshold value of 0.70 (Hair et al., 2006). We therefore used the factor scores from the Principal Component Factor analysis of these three dimensions as the measure of distance measure in our study. We labeled this factor as *economic distance*. The economic distance measure ranges from –2.31 to 3.76 (standardized value), with higher scores corresponding to higher economic distance. However, the Cronbach's alpha for the other four dimensions is 0.54, which is below the threshold value of 0.70. This implies that we cannot take religious, language, cultural and geographic distance into one common factor. Therefore, these dimensions were included as separate distance measures in our analysis (taking standardized scores of the four distance measures in order to maintain consistency with the economic distance measure).

4.4.4. Control variables

We included three sets of control variables in our model. The first set of control variables accounts for subsidiary characteristics. First, we include the R&D intensity of the subsidiary – measured by the number of R&D employees working in R&D area in subsidiaries currently as a percentage of the subsidiary's total employees – because it is well-known that R&D intensity is an important determinant of subsidiary decision-making autonomy (Taggart & Hood, 1999). Second, we include subsidiary size – measured by the natural logarithm of the number of employees at the subsidiary – because larger subsidiaries have better bargaining positions and therefore larger decision-making autonomy (Gates &

Egelhoff, 1986; Johnston & Menguc, 2007; Schüler-Zhou & Schüller, 2013).[12] Third, we include the age of the subsidiary – calculated by subtracting the year the subsidiary was founded from the current year, thus measured by the natural logarithm of the number of year subsidiary operated – because older subsidiaries may have more decision-making autonomy than younger ones because of aggregated knowledge and experience offering them seniority over other subsidiaries and more decision-making autonomy (Björkman & Piekkari 2009; Chiao & Ying, 2013; Gates & Egelhoff, 1986; Schüler-Zhou & Schüller, 2013).

The second set of control variables concerns the headquarters characteristics. First, we control for the original MNE's form of entry mode. Subsidiary decision-making autonomy inherently may be different given the entry mode of the MNE. We account for this by including a dummy variable that equals one if the subsidiary is a greenfield location, and zero otherwise (Gammelgaard et al., 2012b; Luo, 2006; Slangen & Hennart, 2008). Second, we include five entry motives of MNEs: to access operational efficiency, foreign markets, location-bound knowledge and technology, local assets, or local natural resources, respectively. Subsidiaries have different positions in the overall MNE network depending on the entry motive and this may determine decision-making autonomy ex ante (Dunning, 1993; Nachum & Zaheer, 2005; Prahalad & Doz, 1987; Slangen & Beugelsdijk, 2010). We used three aspects concerning cost advantages (i.e., labour, capital and land) to measure the "access to operational efficiency" motive, which each was ranked according to their importance on a four-point Likert scale (ranging completely unimportant to extremely important). A Principal Component Factor analysis showed that these three cost aspects load on one factor (one factor with an eigenvalue larger than 1, i.e. 1.69). We measured this motive by the factor scores of these sub-dimensions. The remaining four motives were each measured according to their importance on a four-point Likert scale (ranging from completely unimportant to extremely important).

The third set of control variables relates to country and industry characteristics. First, we control for industry effects on subsidiary decision-making autonomy. For this, we used the broad structure classification of NACE Rev.2 (2008) and classified subsidiaries into (1)

[12] We tested for a curvilinear effect of size of the subsidiary on subsidiary decision-making autonomy in Chapter 3 and found no significant empirical support. We therefore continue with a linear effect in this chapter.

mining and quarrying (NACE 05–09), (2) manufacturing (NACE 10–33), (3) electricity; gas, steam and air conditioning supply (NACE 35), (4) water supply; sewerage, waste management and remediation activities (NACE 36–39), (5) wholesale and retail trade; repair of motor vehicles and motorcycles (NACE 45–47), (6) transportation and storage (NACE 49–53), (7) information, communication, financial and insurance activities (NACE 58–68), and (8) professional, scientific, technical, administrative and support service activities (NACE 69–82). We constructed seven dummies for the first seven types of industries taking the eighth (i.e., professional, scientific, technical, administrative and support service activities) as the benchmark case. Second, we control for home-country effects. The headquarters of the subsidiaries in the sample are located in twenty-one different countries. Unfortunately, we cannot include twenty home-country dummies in our model because of insufficient observations and the resulting degrees of freedom. As an alternative solution we include a dummy to differentiate between developing and developed home countries. Subsidiaries in developed countries have an advantage of foreignness in innovation through the transfer of product innovations from other parts of the MNE (Un, 2011). Headquarters from developed countries (18 countries in our sample) by definition may have a stronger inclination to innovate because their competitive environment requires them to do so in order to survive than those in developing countries. According to the World Bank, a developed country is defined as the nation having GDP per capita from US $12,000 per year. We used this information to construct the home-country dummy, that is, we distinguished whether the MNE comes from a developed country or not.

4.5. Empirical results

4.5.1. Main regression results

Means, standard deviations and correlations are provided in Table 4.1. Results from the hierarchical OLS regression analyses are summarized in Table 4.2. In preparing the data for the regression analysis, we performed the usual tests to obtain reliable estimates (Hair et al., 2006). The latter yielded satisfactory results: neither heteroskedasticity nor non-normality is

an issue. The maximum value of the correlation coefficients is 0.41, which is far below the threshold value of 0.80 indicating that there are no issues with multicollinearity. We additionally tested for possible biases caused by collinearity among variables by calculating the variance inflation factor (VIF) for each of the regression coefficients. The maximum VIF value is 1.65 and thus well below the cut-off value of 10 recommended by Neter et al. (1985).

Table 4.1. Descriptive statistics and correlations (n = 170)[a]

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Decision-making autonomy	19.2	4.49															
2. R&D intensity (%)	0.10	0.20	−0.06														
3. Size of subsidiary (log)	4.62	1.25	−0.06	−0.30**													
4. Age of subsidiary (log)	2.43	0.58	−0.01	−0.12	0.15*												
5. Parent's entry mode (greenfield)	0.61	0.48	−0.20**	0.06	−0.06	0.20**											
6. Parent's motive to access foreign market	2.78	1.12	0.01	0.08	−0.06	0.01	−0.01										
7. Parent's motive to access operational efficiency	0.18	0.99	−0.26**	−0.02	0.22**	0.11	0.15*	0.08									
8. Parent's motive to access location-bound knowledge and technology	2.30	1.05	−0.01	0.08	0.02	−0.04	−0.03	0.07	0.15*								
9. Parent's motive to access local asset	2.31	1.12	−0.01	0.02	−0.06	0.09	−0.18*	0.33**	0.07	0.25**							
10. Parent's motive to access local natural resource	1.72	1.05	−0.07	−0.00	−0.08	0.06	0.02	0.09	0.05	0.10	0.06						
11. Home country dummy (developed country)	0.92	0.25	0.09	0.01	0.01	−0.06	0.11	−0.09	−0.09	−0.11	−0.04	−0.04					
12. Economic distance (factor scores)	−0.15	0.82	−0.09	−0.11	−0.01	−0.01	−0.02	−0.10	0.07	0.18*	0.11	−0.05	−0.45**				
13. Language distance	−0.02	0.94	0.02	0.02	0.18*	−0.08	−0.05	−0.10	0.03	0.08	0.00	−0.07	0.10	0.13			
14. Religious distance	−0.05	0.76	0.03	−0.08	−0.01	−0.23**	0.04	0.05	−0.10	−0.20**	−0.09	0.01	0.08	−0.03	0.04		
15. Cultural distance	0.01	1.01	−0.11	0.09	0.01	−0.04	0.03	0.11	0.02	−0.01	0.06	0.09	0.18*	−0.37**	0.15*	0.26**	
16. Geographic distance	0.08	0.93	−0.04	0.18	0.06	−0.05	−0.11	0.05	−0.12	−0.14	−0.09	0.01	−0.05	−0.41**	0.18*	0.22**	0.18*

[a]All seven industry dummies are included and their correlation is maximum 0.28. *p<0.05; **p<0.01.

Table 4.2. The effect of distance on subsidiary decision-making autonomy (OLS estimates)[a]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	21.5 (2.83)**	20.6 (2.89)**	20.3 (2.94)**	19.9 (2.95)**	20.8 (2.88)**	20.7 (2.96)**	21.6 (3.07)**
Control variables							
R&D intensity (%)	−2.00 (1.79)	−2.19 (1.79)	−2.06 (1.80)	−1.99 (1.79)	−1.57 (1.85)	−2.22 (1.81)	−1.30 (1.86)
Size of subsidiary (log)	−0.14 (0.30)	−0.22 (0.31)	−2.06 (0.30)	−0.19 (0.30)	−0.14 (0.31)	−0.20 (0.30)	−0.22 (0.31)
Age of subsidiary (log)	0.47 (0.61)	0.54 (0.61)	0.60 (0.64)	0.43 (0.62)	0.53 (0.61)	0.52 (0.61)	0.64 (0.64)
Parent's entry mode (greenfield)	− 1.90 (0.75)*	−1.85 (0.75)*	−1.90 (0.76)*	−1.84 (0.75)*	−0.97 (0.39)*	−1.84 (0.75)*	−1.98 (0.76)**
Parent's motive to access foreign market	0.17 (0.33)	0.23 (0.33)	0.20 (0.33)	0.27 (0.33)	0.03 (0.35)	0.25 (0.33)	0.18 (0.34)
Parent's motive to access operational efficiency	−0.99 (0.38)*	−0.91 (0.39)*	−0.89 (0.39)*	−0.92 (0.39)*	−0.27 (0.35)*	−0.97 (0.39)*	−0.92 (0.39)*
Parent's motive to access location-bound knowledge and technology	0.04 (0.34)	0.09 (0.35)	0.11 (0.35)	0.08 (0.35)	0.03 (0.35)	0.12 (0.35)	0.11 (0.35)
Parent's motive to access local asset	−0.26 (0.35)	−0.24 (0.35)	−0.24 (0.35)	−0.18 (0.35)	−0.27 (0.35)	−0.21 (0.35)	−0.09 (0.36)
Parent's motive to access local natural resource	−0.17 (0.34)	−0.15 (0.34)	−0.15 (0.34)	−0.12 (0.34)	−0.13 (0.34)	−0.16 (0.34)	−0.12 (0.34)
Home country dummy (developed country)	0.53 (1.32)	1.23 (1.32)	1.37 (1.33)	1.85 (1.43)	1.04 (1.32)	1.05 (1.46)	0.45 (1.69)
Drivers of distance							
Language distance		0.14 (0.37)					0.70 (0.41)
Religious distance			0.12 (0.38)				0.74 (0.51)
Cultural distance				−0.56 (0.34)			−0.96 (0.39)*
Geographic distance					−0.45 (0.39)		−1.01 (0.47)*
Economic distance (factor scores)						−0.19 (0.50)	−1.46 (0.64)*
n	170	170	170	170	170	170	170
The number of country pairs	55	55	55	55	55	55	55
F-values	2.74	2.80	2.80	2.91	2.92	2.91	2.96
Adjusted R-squared	15.04	15.08	15.08	16.58	15.69	15.09	20.51
P_value	0.002	0.001	0.001	0.000	0.000	0.000	0.000

[a] Standard errors are listed in parentheses. All seven industry dummies are included, but none of these are significant. *p<0.05; **p<0.01.

The regression results offer two conclusions. First, the various fit parameters show that our models fit the data well. Model 1 is a model with control variables and a constant only. The various dimensions of distance were added in Model 2, 3, 4, 5, 6 and 7, respectively. The R-squared improves from 15.04 percent in Model 1 to 20.51 percent in Model 7. The parameter estimates remain robust in terms of signs. In Model 2 and 3 the first two dimensions of distance – language distance and religious distance – were included, respectively. The results show that language distance and religious distance are positively related to degree of decision-making autonomy, but they are not significant ($\beta = 0.14$, n.s for language distance, $\beta = 0.12$, n.s for religious distance). Next to these, we added cultural distance, geographic distance and economic distance in Model 4, 5 and 6, respectively. These three models show that cultural distance, geographic distance and economic distance are negatively associated with degree of decision-making autonomy and not significant ($\beta = -0.56$, n.s for cultural distance; $\beta = -0.45$, n.s for geographic distance; $\beta = -0.19$, n.s for economic distance).

Model 7 includes all dimensions of distance and shows that the three dimensions of distance are negatively and significantly related to decision-making autonomy. Model 7 shows that cultural distance ($\beta = -0.96$, $p < 0.05$), geographic distance ($\beta = -1.01$, $p < 0.05$), and economic distance ($\beta = -1.46$, $p < 0.05$) reduce degree of decision-making autonomy of subsidiaries. Taken together, it can be concluded that our Hypothesis 1 is supported by our data whereas Hypothesis 2 needs to be rejected. Our results generally support the agency perspective suggesting that distance induces MNEs to increase control and lower subsidiary decision-making autonomy.

The significant results for the control variables are in line with expectations. A greenfield entry mode is associated with lower levels of the decision-making autonomy ($\beta = -1.98$, $p < 0.01$). This result confirms that the parent of subsidiaries has to share information requirements and information processing systems with foreign subsidiaries with greenfield mode. This sharing propels the parents control over their subsidiaries (Luo, 2006). The results of Model 7 also show that the level of subsidiary decision-making autonomy is limited by the MNE's motive to access operational efficiency in host countries ($\beta = -0.92$, $p < 0.05$). This result means that subsidiaries undertaking efficiency-seeking activities aim to

take advantage of inter-country differences in factor endowments such as natural resources and inexpensive labor (Nachum & Zaheer, 2005). These subsidiaries often have close ties with other subsidiaries within the MNE network and are supplied by other subsidiaries rather than local firms. This implies that such subsidiaries are more integrated within the network of their parent and thus receive less decision-making autonomy (Prahalad & Doz, 1987; Slangen & Beugelsdijk, 2010).

4.5.2. Robustness analyses

To explore the robustness of the above findings, we performed additional analyses.[13] Table 4.3 reports these results.

First, we determined whether our results were robust for the measure of the dependent variable, i.e. the subsidiary decision-making autonomy (see Panel B). Recall that our decision-making autonomy measure is an aggregated measure of seven different business activities. As a test for robustness we estimated our models with the factor scores for decision-making autonomy. This did not affect our findings (with $\beta = -0.21$, $p < 0.05$ for cultural distance, $\beta = -0.23$, $p < 0.05$ for geographic distance, and $\beta = -0.33$, $p < 0.05$ for economic distance, respectively).[14] Second, we estimated the models controlling for the possibility of R&D instead of for R&D intensity (see panel C). The possibility of R&D, and R&D intensity are highly correlated ($r = 0.92$). The regression results are the same (with $\beta = -0.45$, $p < 0.05$ for cultural distance, $\beta = -0.88$, $p < 0.01$ for geographic distance, and $\beta = -1.26$, $p < 0.01$ for economic distance, respectively).

[13] We tested non-linear effects of distance aspects on subsidiary decision-making autonomy and found no significant empirical support what so ever for non-linear relationships.

[14] Using the factor scores for the base model regressions does not affect results, thus we presented these results as one of the robustness tests (see Table 4.3).

Table 4.3. Robustness analysis of decision-making autonomy[a]

	Original results	*Additional tests*			
	Panel A: Initial results extracted from Table 2 [Model (7)]	*Panel B:* DMA measured by factor scores	*Panel C:* Controlling R&D intensity dummy instead of R&D intensity	*Panel D:* Controlling time zone difference instead of geographic distance	*Panel E:* Measuring psychic distance by Berry et al. (2010)'s method
Constant	21.6 (3.07)**	0.76 (0.69)**	21.1 (1.92)**	20.4 (3.00)**	17.6 (3.15)**
Control variables					
R&D dummy	–	–	1.92 (0.47)	–	–
R&D intensity (%)	−1.30 (1.86)	−0.28 (0.42)	–	−0.74 (1.91)	0.59 (1.64)
Size of subsidiary (log)	−0.22 (0.31)	−0.04 (0.07)	−0.25 (0.20)	−0.22 (0.31)	0.01 (0.40)
Age of subsidiary (log)	0.64 (0.64)	0.14 (0.14)	0.14 (0.43)	0.81(0.64)	0.72 (0.75)
Parent's entry mode (greenfield)	−1.98 (0.76)**	−0.45 (0.17)**	−1.31 (0.51)*	−2.12 (0.76)**	−2.73 (0.86)**
Parent's motive to access foreign market	0.18 (0.34)	0.04 (0.07)	−0.00 (0.21)	0.14 (0.34)	0.38 (0.42)
Parent's motive to access operational efficiency	−0.92 (0.39)*	−0.20 (0.08)*	−0.48 (0.24)*	−0.87 (0.39)*	−1.65 (0.51)**
Parent's motive to access location-bound knowledge and technology	0.11 (0.35)	0.02 (0.08)	0.04 (0.24)	0.16 (0.35)	0.26 (0.39)
Parent's motive to access local asset	−0.09 (0.36)	−0.02 (0.08)	0.14 (0.21)	−0.10 (0.35)	−0.06 (0.43)
Parent's motive to access local natural resource	−0.12 (0.34)	−0.02 (0.07)	0.11 (0.25)	−0.10 (0.34)	−0.05 (0.33)
Home country dummy (developed country)	0.45 (1.69)	−0.10 (0.38)	−2.20 (1.12)	0.24 (0.57)	−2.58 (2.07)
Drivers of distance					
Language distance	0.70 (0.41)	0.15 (0.09)	0.14 (0.26)	0.54 (0.39)	–
Religious distance	0.74 (0.51)	0.16 (0.11)	0.16 (0.30)	0.90 (0.53)	–
Cultural distance	−0.96 (0.39)*	−0.21(0.08)*	−0.45 (0.28)*	−0.84 (0.39)*	−0.58 (0.44)
Geographic distance	−1.01 (0.47)*	−0.23 (0.10)*	−0.88 (0.32)**	−1.02 (0.43)*	−1.17 (0.52)**
Economic distance (factor scores)	−1.46 (0.64)*	−0.33 (0.14)*	−1.26 (0.46)**	−1.26 (0.59)*	−0.04 (0.14)*
Administrative distance	–	–	–	–	0.05 (0.08)
Demographic distance	–	–	–	–	0.11 (0.13)
Financial distance	–	–	–	–	0.04 (0.11)
N	170	170	371	170	121
The number of country pairs	55	55	74	55	37
F-values	2.96	1.84	2.34	1.88	2.30
Adjusted R-squared	20.51	20.72	12.87	21.07	21.34
P_value	0.000	0.019	0.000	0.018	0.000

[a]Standard errors are listed in parentheses. All seven industry dummies are included, but none of these are significant. *p<0.05; **p<0.01.

Third, the correlation coefficient between time zone difference and geographic distance between home and host countries is high ($r = 0.94$). We estimated our models with the control of geographic distance as a test for robustness to discern whether our findings are different due to time zone effects or to the effects of transportation costs (Dow & Karunaratna, 2006). This also did not affect the results reported in Table 4.2 (with $\beta = -0.84$, $p < 0.05$ for cultural distance, $\beta = -1.02$, $p < 0.05$ for geographic distance, and $\beta = -1.26$, $p < 0.05$ for economic distance, respectively).

Fourth, Berry et al. (2010) used the Mahalanobis method to calculate cross-national distances, which is scale-invariant and takes into consideration the variance-covariance matrix. We used their database for an alternative measure of distance. We performed a factor analysis on the nine dimensions of Berry et al. (2010) for our sample. A Principal Component Factor analysis (see Appendix 4D) showed that the nine dimensions are grouped into three different factors with three eigenvalues larger than 1 (i.e., 3.17, 1.94 and 1.50, respectively). Political, knowledge, global, and economic distance between home and host countries are clustered into the first factor. Administrative, financial, and cultural distance are clustered into the second factor. The third factor includes geographic and demographic distance. The Cronbach's alpha of the first four items was 0.78, which satisfies the threshold value of 0.70 (Hair et al., 2006). Thus, we used factor scores from the Principal Component Factor analysis of these four items as a first alternative measure of distance and labeled this *economic distance*. However, the Cronbach's alpha of the second and the third factor are 0.65 and 0.34, respectively. Therefore, cultural, geographic, administrative, demographic and financial distances were taken as separate measures of distance (taking standardized scores of the five distance measures in order to maintain consistency with the economic distance measure).

The results in Panel D show that three of these alternative measures of distance – i.e., administrative, demographic, and financial distance – have non-significant positive effects on subsidiary decision-making autonomy. The other measures – i.e., cultural, geographic and economic distance – have negative effects on subsidiary decision-making autonomy with significant negative findings for geographic and economic distance, respectively (with $\beta = -1.17$, $p < 0.01$ and $\beta = -0.04$, $p < 0.05$, respectively). In summary, these robustness tests

confirm our main regression results reported in Table 4.2 and offer support to the conclusion that home-host country distance limits the decision-making autonomy of subsidiaries.

4.6. Discussion and conclusions

Our study advances our understanding of how distance is related to subsidiary decision-making autonomy. We build on agency and business network theory, leading us to develop two opposite hypotheses on the relation between distance and subsidiary decision-making autonomy. Theoretically, arguments go both ways, leading us to ex-ante predict both a positive and a negative association between distance and subsidiary decision-making autonomy. Building on a micro-dataset from 170 subsidiaries in the Czech Republic, Hungary, Poland, Romania and the Slovak Republic, our empirical results show that the cultural distance, geographic distance and economic distance – are negatively associated with the degree of decision-making autonomy of a subsidiary. This suggests that as distance between home and host country increases, a tendency for centralization associated with lower levels of subsidiary decision-making can be observed.

We should mention three limitations of our study that could serve as a roadmap for future research. First, the distance measures are based on the average value of each country's score. This assumes country level homogeneity and excludes the possibility that within country variation exists. For example, headquarters and subsidiaries can locate in different regions or cities within home and host countries, respectively (e.g. Goerzen et al., 2013). Whereas we see no reason to expect our results will be different and explicit control for subnational variation is a logical next step in distance research (Beugelsdijk & Mudambi, 2013), in particular for research on distance and headquarters-subsidiary relations. Second, our study measured distance by using existing data at macro-level. We did not measure distance by individual perceptions. This may be important in the headquarters-subsidiary relationship because an individual perception measure may capture the relationship between distance issues and power in MNE networks differently than macro-level measures. Future research could resolve this issue by applying both, individual perception

measures of distance and macro-level measures of distance in a single study and compare the results for subsidiary decision-making autonomy. Third, although this chapter examines the characteristics of the parent company, the subsidiary, industry and country-contexts, the aspect of the individual manager is not taken into account – that is, personal relationships among managers in MNE networks. Personal relationships form a central determinant of success, both within the firm and in its external interactions (Conklin, 2011). For example, personal relationships can increase trust between managerial levels in an organization. Also, changes in the business environment may require renegotiation of contracts – a process that may be most effective in the context of longstanding interpersonal relationships and trust (see Ertug et al., 2013 for a comprehensive review). Taken together, we suggest that subsidiary decision-making autonomy may increase as trust between subsidiary managers and top managers is high due to deep personal relationships among them. We recommend that future work examines this aspect in more detail.

Although our finding on the negative distance role fits the prediction of agency theory, it does not necessarily contradict business network theory. A larger distance to the host country can be associated with the need to be locally responsive (as business network theory suggests) for which high levels of subsidiary decision-making autonomy are required, even when faced with an increased distance between home and host countries. In other words, future research would do well to explore the question how local embeddedness and subsidiary decision-making autonomy affect processes like innovation of which business network theory suggests that subsidiary decision-making autonomy is important. Having shown in this chapter how distance is associated with subsidiary decision-making autonomy, this is exactly what we explore in the following chapter. We analyze how subsidiary decision-making autonomy is related to the innovativeness of subsidiaries (Chapter 5). Together with the findings obtained in the previous chapter on the role of the institutional environment, we gain a more complete picture on the determinants and consequences of subsidiary decision-making autonomy.

APPENDIX

4A. The correspondent country pairs between home and host countries in the sample

	Home countries	Host countries	Number of country pairs
1.	Argentina	The Czech Republic	1
2.	Austria	The Czech Republic	4
		Hungary	
		Romania	
		The Slovak Republic	
3.	Belgium	Hungary	3
		Poland	
		Romania	
4.	The Czech Republic	Poland	2
		The Slovak Republic	
5.	Denmark	The Czech Republic	4
		Hungary	
		Poland	
		The Slovak Republic	
6.	Finland	Poland	1
7.	France	Hungary	4
		Poland	
		Romania	
		The Slovak Republic	
8.	Germany	The Czech Republic	5
		Hungary	
		Poland	
		Romania	
		The Slovak Republic	
9.	Greece	Romania	1
10.	Italy	Poland	2
		Romania	
11.	Japan	Poland	1
12.	Luxumburg	Poland	2
		Romania	
13.	Netherlands	The Czech Republic	3
		Poland	
		The Slovak Republic	
14.	Norway	Poland	1
15.	Poland	The Slovak Republic	1
16.	The Slovak Republic	The Czech Republic	1
17.	Spain	The Czech Republic	4
		Hungary	
		Poland	
		Romania	

	Home countries	Host countries	Number of country pairs
18.	Sweden	The Czech Republic	2
		Poland	
19.	Switzerland	The Czech Republic	3
		Poland	
		Romania	
20.	UK	The Czech Republic	5
		Hungary	
		Poland	
		Romania	
		The Slovak Republic	
21.	US	The Czech Republic	5
		Hungary	
		Poland	
		Romania	
		The Slovak Republic	
		Total of country pairs	**55**

4B. Measure of dependent variable: subsidiary decision-making autonomy (taken from the questionnaire)

Please indicate to which extent independent decisions in the following business activities are currently taken by your enterprise or your headquarters. Please choose between four-point scales: Decisions are taken 1) only by your headquarters, 2) mainly by your headquarters, 3) mainly by your enterprise or 4) only by your enterprise.

	Only by your headquarters	Mainly by your headquarters	Mainly by your enterprise	Only by your enterprise
Finance and investment				
Strategic management				
Operational management				
Marketing and market research				
Purchases and supplies				
Distribution and sales				
Research and innovation				

4C. Rotated factor loadings of the seven dimensions of Dow and Karunaratna (2006) – Principal component factor method.

Variable	Factor 1	Factor 2
Political system distance	**0.786**	0.031
Industrial development distance	**0.875**	-0.108
Educational distance	**0.790**	0.041
Religious distance	0.165	**0.817**
Language distance	-0.413	**0.513**
Cultural distance	-0.503	**0.536**
Geographic distance (log)	0.015	**0.686**

4D. Rotated factor loadings (pattern matrix) of the seven dimensions of psychic distance of Berry, Guillén and Zhou (2010) (extracted from the Stata output) – Principal component factor method.

Variable	Factor 1	Factor 2	Factor 3
Geographic distance	-0.157	-0.042	**0.889**
Demographic distance	0.342	0.333	**0.623**
Admistriative distance	0.009	**0.703**	0.247
Financial distance	0.054	**0.934**	-0.009
Cultural distance	0.507	**-0.600**	0.336
Political system distance	**0.612**	0.366	0.593
Knowledge distance	**0.928**	-0.158	-0.076
Global distance	**0.948**	0.055	0.068
Economic distance	**0.810**	0.218	-0.053

4E. An overview of definitions and measures for subsidiary decision-making autonomy (DMA)

	Author(-s)	Word(-s) used	DMA definition	DMA measure
1.	Aylmer (1970)	Decision-making autonomy	Autonomy was defined as the extent of local management's dependence for marketing decisions. Degree of local management autonomy classified according to type of local marketing decision.	The degree of local autonomy in making marketing decisions was described for decisions concerning product design, advertising approach, retail price, and distribution. The field observations were categorized in whether regard to local management (1) retained primary authority; (2) shared this authority with other organizational levels, such as the regional office or headquarters; or (3) primary authority rested elsewhere.
2.	Garnier (1982)	Decision-making autonomy	Autonomy is an element of the structure of an organization. It is related to the division of the decision making authority between a local unit and an outside organization that controls it. However, neither the structure nor, hence, the autonomy is an end in itself.	Autonomy is measured at the level of the individual decision and expressed in the form of a global index of autonomy (GIA). The GIA ranges from 0 to 100.
3.	Gate and Egelhoff (1986)	Centralization versus decentralization	The same definition of Garnier (1982).	The degree of centralization was determined for 22 important decisions. The individual decision scores were averaged together to produce three separate centralization scales: one for marketing decisions, a second for manufacturing decisions, and a third for financial decisions (levels of centralization were ranked: 1= within the subsidiary; 2=within the international division, product division or geographic region headquarters; 3=above the division level and within the corporate headquarters).
4.	Roth and Morrison (1992)	Decision-making autonomy	Subsidiary autonomy was mentioned as a global subsidiary mandate. As the subsidiary takes a dominant role in managing the resource flows associated with a particular component, product, or product line, to pursue a global strategy, the subsidiary remains part of a interdependent network.	A global subsidiary mandate was measured by that executives were asked to indicate how characteristic four statements were in describing the strategy of their strategy. A seven-point scale was used (1=not at all characteristic and 7=extremely characteristic). A global subsidiary mandate index was then created by summing the responses for the four items.

	Author(-s)	Word(-s) used	DMA definition	DMA measure
5.	Taggart (1997)	Decision-making autonomy	Autonomy may be regarded as a decision–based process that through bargaining between centre and periphery in an organization.	Six decisions were measured on a four-point scale (1=decided mainly by headquarter without consulting subsidiary; 4=decided mainly by subsidiary without consulting headquarter).
6.	Vachani (1999)	Autonomy	The level of autonomy enjoyed by the manager of their typical foreign-country unit over the decision-making process and outcome for fifteen managerial decisions. These decisions spanned marketing, human resources, manufacturing and finance.	The level of subsidiary autonomy was measured by using the questionnaire indicating that the manager of foreign subsidiary enjoyed over the decision–making process and outcome for 15 managerial decisions on a seven-point scale.
7.	Taggart and Hood (1999)	Decision-making autonomy	Decisions may be taken by the parent with or without participation by the subsidiary (i.e, parent-oriented), or they may be taken by the subsidiary with or without participation of corporate headquarter (i.e, subsidiary-oriented).	The extent to which the subsidiary can make decisions about the markets it serves and decisions about the product range it supplies. For each of these, four classifications (1=decided mainly by the parent company without consulting with or seeking the advice of the subsidiary; 4=decided mainly by the subsidiary without consulting the parent).
8.	Birkinshaw and Hood (2000)	Decision-making autonomy.	Based on the definition of Roth and Morrison (1992).	Respondents were asked to state the level that had the authority to make the 3 decisions with 3 scales (where 1 = made by corporate headquarter, 3=within subsidiary).
9.	O'Donnell (2000)	Decision-making autonomy	Autonomy is the degree to which the foreign subsidiary of the MNE has strategic and operational decision – making authority. Subsidiary autonomy was defined as the extent to which the foreign subsidiary has operational and strategic decision-making authority across its entire product line.	For the overall business activities of the subsidiary, indicate the extent of headquarters and/or subsidiary influence on the 16 decisions (1=headquarters almost always decides, 4=subsidiary almost always decides).

	Author(-s)	Word(-s) used	DMA definition	DMA measure
10.	Edward et al. (2002)	Decision-making autonomy	Autonomy is the degree which decisions pertaining to each activity are undertaken by the subsidiary. Autonomy is contingent upon whether the MNE operates a centralized or decentralized structure. The three types of of organization: decentralized federations, coordinated federations or centralized hubs.	Subsidiary autonomy was measured by interviewing subsidiary managers through response with a list of 17 business activities and asked to rate the degree to which decisions pertaining to each activity are undertaken by the subsidiary or parent company (1=denotes subsidiary only, 5=denotes parent only).
11.	Männik et al. (2005)	Decision-making	Their study based on the definition of Taggart (1997).	Which business functions are being undertaken: a) on your own only, (b) mainly on your own, (c) mainly by your foreign owner, or (d) by your foreign owner only? Using 13 business functions.
12.	Johnston and Menguc (2007)	Autonomy	Subsidiary autonomy is likely to be primarily associated with the subsidiary's superiority over HQ with regard to knowledge of the host environment, the subsidiary's transformation process and assorted marketing, procurement, distribution and other issues.	How much influence head office would have on the following nine decisions. Individual scale items were summed to create an aggregate measure of the level of subsidiary autonomy. The scale of each question ran from (totally headquarter decision) 1 to 5 (totally subsidiary decision). Thus, the overall score ranges from 9 to 45.
13.	Slangen and Hennart (2008)	Autonomy	The degree of subsidiary autonomy is the extent to which a subsidiary's management team is free to run the venture at its own discretion. They deliberately asked for the planned rather than the realized level of autonomy for each activity because the planned level better reflects parents' strategic intentions.	How much autonomy the respondent's management team planned to give the subsidiary at the time it was established or acquired. The authors asked subsidiaries to do so for 12 different business activities on five-point Likert-type scales.
14.	Takeuchi et al. (2008)	Autonomy	Based on the study of Bartlett and Ghoshal (1989).	The level of decision autonomy that the expatriate managers possess at the local subsidiary was measured by three items (1=headquarters decides alone, 5=subsidiaries decides alone).

	Author(-s)	Word(-s) used	DMA definition	DMA measure
15.	Jindra et al. (2009)	Autonomy	This study did not mention the particular definition.	Subsidiaries' autonomy by asking subsidiaries to indicate which of the following business functions are being undertaken: (a) on your own only, (b)mainly on your own, (c) mainly by your foreign owner, or (d) by your foreign owner only.
16.	Ambos et al. (2010)	Autonomy	Using the definition of Roth and Morrison (1992).	How much autonomy does the subsidiary have in terms of making three decisions? Using a five Likert-scale.
17.	Ambos et al. (2011)	Autonomy	Based on the definition of Roth and Morrison (1992).	Autonomy was measured on a nine-item scale with five-point scales (1=your subsidiary decides, 5=the parent decides)
18.	Nell et al. (2011)	Autonomy	This study did not mention the definition, autonomy is included as a control variable in the model.	The scale is built on four items with 5-point scale from 1 (subsidiary decides 100%) to 5 (parent decides 100%).
19.	Rabbiosi (2011)	Autonomy	Based on Ghoshal and Nohria's study (1989).	The four strategic decisions were assessed with five scales. The final measure of subsidiary autonomy is the average of responses to the four items.
20.	Slangen (2011)	Autonomy	The same definition of Slangen and Hennart (2008).	The planned level of subsidiary autonomy by asking parent executives to indicate on 5-point Likert-type scales how much autonomy their management team planned to give the focal subsidiary in 12 functional areas at the time it was established or acquired (1=very little autonomy intended' through 5=very much autonomy intended).
21.	Gammelgaard et al. (2012a, b)	Decision-making authority	Based on the study of Birkinshaw and Hood (2000) and Taggart and Hood (1999).	For the strategic and operational decision making items, respondents were asked to assess the extent of their decision-making autonomy on a scale from one (exclusively by headquarters) to five (exclusively by the subsidiary).
22.	Chiao and Ying (2013)	Autonomy	Based on the study of Garnier (1982), Gates & Egelhoff (1986), Taggart & Hood (1999), and Vachani (1999).	Subsidiary autonomy is measured by five items, representing decision-making autonomy in five areas: busisness strategy, pricing strategy, marketing strategy, personal policy, and financial strategy into five.

Chapter 5

Subsidiary decision-making autonomy and subsidiary innovation

5.1. Introduction

The two preceding chapters examine the determinants of subsidiary decision-making autonomy by capturing the role of home- and host country context and the home-host distance. Next, we turn to the consequences of subsidiary decision-making autonomy by studying the role of decision-making autonomy in subsidiary innovation. This study aims to enhance our understanding of subsidiary innovation by developing a set of theoretical arguments that together with empirical tests complement upcoming IB literature on subsidiary innovation and decision- making autonomy.

In this contemporary IB literature, multinational enterprises (MNEs) are conceptualized as a globally distributed network of affiliated firms (Barlett & Ghoshal, 1989) or a social community crossing national boundaries (Kogut & Zander, 1993), in which subsidiaries play an increasingly important role to the MNEs' competitive advantage (e.g., Andersson et al., 2002; Birkinshaw et al., 1998; Venaik et al., 2005). One of the crucial drivers of this advantage is subsidiary innovation (Phene & Almeida, 2008). Various studies have indicated that subsidiaries are viewed as an important source of knowledge contributing to innovation (Frost et al., 2002; Gupta & Govindrajan, 2000; Phene & Almeida, 2008; Tallman & Phene, 2007; Vanaik et al., 2005). Accordingly, a good understanding of subsidiary innovation is important as subsidiary innovation results in increased operational efficiency,

better subsidiary performance in local markets – e.g., due to first-mover advantages (Damanpour et al., 2009) – and better MNE performance through the spill-over of new knowledge and market opportunities (Ameida & Phene, 2004; Phene & Almeida, 2008; Roberts & Amit, 2003).

Recent work addressing subsidiary innovation has focused on subsidiary's absorptive capacity and knowledge integration within the MNE network (Frost & Zhou, 2005; Gupta & Govindrajan, 2000; Mudambi & Navarra, 2004; Phene & Almeida, 2008). Knowledge absorbed by the subsidiary from its external and its internal networks is positively associated with innovation (Almeida & Phene, 2004; Frost, 2001). One of the questions related to the management of both intra- and inter-organizational networks by subsidiaries concerns the degree of decision-making autonomy that subsidiaries have. The level of decision-making autonomy of a subsidiary is a crucial missing link in our understanding of subsidiary innovation (Gammelgaard et al., 2012a). Prior research suggests that subsidiary decision-making autonomy plays an important role in the incentive structure for effectively doing research and development (Asakawa, 2001) and in the resource-dependence structure between subsidiaries and headquarters (Bartlett & Ghoshal, 1989; Preffer & Salancik, 1978). Although several useful studies on the role played by subsidiaries in innovation at the subsidiary level can be found in the recent international business and management literature (Almeida & Phene, 2004; Frost, 2001; Phene & Almeida, 2008), the relation between subsidiary's decision-making autonomy and subsidiary innovation is not yet fully understood. Our study aims to unravel the role of subsidiary decision-making autonomy in explaining subsidiary innovation.

To better understand the role of decision-making autonomy in explaining subsidiary (product) innovation, we use two theoretical perspectives that have appeared recently (Ciabuschi et al., 2012; Ciabuschi et al., 2011a; Forsgren & Holm, 2010). The first perspective emphasizes the importance of headquarters involvement in subsidiary innovation and assumes that headquarters has experience and knowledge about a particular innovation (Ciabuschi et al., 2011a, b). In this view, headquarters controls innovation processes at the subsidiary level in spite of the distance between home and host countries (Buckley & Hashai, 2009). The other perspective emanates from business network theory (Andersson et

al., 2007; Andersson & Holm, 2010; Forsgren et al., 2005; Forsgren, 2008). This perspective assumes that a headquarters lacks local knowledge and faces much uncertainty because the headquarters is a relative outsider to the subsidiaries' (external) business networks. This is associated with an increased level of subsidiary's decision-making autonomy and a decentralization of the innovation process to the subsidiary.

These two complementary theoretical perspectives on subsidiary innovation naturally lead to the question of what the optimal level of decision-making autonomy is. Our study develops a model that captures the role of decision-making autonomy in subsidiary innovation. In doing so, we theoretically explore and advance our understanding of subsidiary innovation by developing a set of theoretical arguments logically derived from the above two theories. Theoretically, the headquarters centered view predicts a negative relationship between subsidiary decision-making autonomy and innovation, whereas business network theory predicts a positive relationship. Depending on which view dominates at which level of decision-making autonomy, one could also predict a non-linear relationship between autonomy and innovation. With increasing levels of decision-making autonomy, the negative effect predicted by the headquarters view may be offset by the positive effects predicted by business network theory, in case we may expect to find a non-linear, U-shaped, relationship between decision-making autonomy and innovation. Given this ex-ante theoretical ambiguity our model is of an exploratory nature. We thus test both for a linear and non-linear effect of decision-making autonomy on subsidiary innovation.

We test our model on 134 subsidiaries located in five European countries. We find that the degree of decision-making autonomy of subsidiaries plays an important role in influencing subsidiary innovation. Our empirical test supports our hypothesis on the non-linear relationship between subsidiary decision-making autonomy and innovation intensity (a continuous measure of the fraction of new products in total sales). In particular, we find a U-shaped relationship between subsidiary decision-making autonomy and innovation, with increasing levels of decision-making autonomy first being associated with a decrease in innovation and after a certain level leading to higher innovation levels. Our results imply that to increase innovation intensity at the subsidiary level, headquarters either gives subsidiaries full decision-making autonomy or almost no decision-making authority (full

control by headquarters). Medium degrees of decision-making autonomy are associated with the lowest level of subsidiary innovativeness.

5.2. Theory and hypotheses

A substantial amount of research on the role of subsidiaries in MNEs has evolved in recent years, in which subsidiaries are presented as important drivers of the overall competitive advantage of MNEs (Birkinshaw & Hood, 1998; Cantwell, 2001; Cantwell & Mudambi, 2005). Given the crucial role of knowledge for firms (Barney, 1991; Grant, 1996), leveraging knowledge across geographic boundaries is the basis for MNEs' sustained competitive advantage and an effective transfer of knowledge within the MNE has become critical (Ambos et al., 2006; Björkman et al., 2004; Birkinshaw et al., 1998; Gupta & Govindrajan, 2000; Mudambi & Navarra, 2004; Rabbiosi, 2011). Depending on the subsidiary's strategic role (Kuemmerle, 1997; Nohria & Ghoshal, 1994), this knowledge can either flow from headquarters to subsidiaries or follow the reverse route (Dierickx & Cool, 1989; Frost & Zhou, 2005). Subsidiaries are increasingly viewed as an important *source* of knowledge contributing to innovation success at the subsidiary as well as the whole MNE group (Frost et al., 2002; Gupta & Govindrajan, 2000; Phene & Almeida, 2008; Tallman & Phene, 2007; Vanaik et al., 2005). Knowledge absorbed by the subsidiary from the host country and the role of subsidiary capabilities – both sourcing capabilities and combinative capabilities – positively affect the scale and quality of innovation (Frost, 2001; Phene & Almeida, 2008).

A key challenge for subsidiaries is the need to balance internal relations within the MNE network and external networks in the local host environment. Both have been shown to be relevant sources of knowledge. Almeida and Phene (2004) examine the external knowledge and the technological richness of the headquarters used by the subsidiary to create new inventions for its innovation and show that these sources positively contribute to this process. Despite these useful insights on the need to balance external and internal knowledge sources in generating innovations at the subsidiary level, the question rises how subsidiaries can achieve this.

We argue that subsidiary decision-making autonomy, defined as "the degree to which the foreign subsidiary of the MNE has strategic and operational decision-making authority" (O'Donnell, 2000: 528), is a crucial missing link in our understanding of subsidiary innovation. The degree of subsidiary decision-making autonomy is a key reflection of the overall organizational structure of subsidiaries as well as current power-dependence structures between headquarters and subsidiaries (Asakawa, 2001; Bartlett & Ghoshal, 1989; Preffer & Salancik, 1978). Moreover, decision-making autonomy is a key feature of the value system and incentive structure for effectively doing research and development (Asakawa, 1996, 2001; Brooke, 1984), and provides a platform for establishing initiatives of the subsidiary (Birkinshaw, 1997; Birkinshaw et al., 1998; Mudambi, 2011).

To assess the pivotal role of subsidiary decision-making autonomy, we build on two theoretical perspectives that have emerged in the recent subsidiary literature (Ciabuschi et al., 2011a; Forsgren & Holm, 2010). The first perspective assumes that headquarters controls and coordinates various innovation processes at the subsidiary level (at least indirectly), albeit from a distance (Buckley & Hashai, 2009). The reason is that the headquarters has a clear understanding of what knowledge a subsidiary lacks and which innovation processes to support, and how to efficiently design the innovation process (Ciabuschi et al., 2011a, b; Forsgren & Holm, 2010). In addition, headquarters possesses valuable expertise for innovation projects and find ways of intervening that will ensure the relevant application of the knowledge at the subsidiary. The other perspective stems from business network theory (Andersson et al., 2007; Andersson & Holm, 2010; Forsgren et al., 2005; Forsgren, 2008), and assumes that headquarters suffers not only from a lack of knowledge about the particular innovation process at local subsidiaries, but also from genuine uncertainty for accessing and obtaining information and knowledge at the local level. The reason is that the headquarters is a relative outsider to the local business network of the subsidiary (Andersson et al., 2007). Therefore, in order to enhance the quality and scale of innovation, headquarters needs to decentralize decisions to subsidiaries. As both perspectives essentially hinge on the role of subsidiary decision-making autonomy, we theoretically advance our understanding of subsidiary innovation by focusing on the role of subsidiary decision-making autonomy.

The first perspective centering on the function of headquarters sheds light on negative effects of high levels of decision-making autonomy on subsidiary innovation and suggests headquarters should take full control. Two main reasons exist for such an argument. Both refer to the importance of the function of the headquarters in subsidiary operations. First, high levels of decision-making autonomy are likely to decrease opportunities to recombine different types of knowledge (internal and external) in the subsidiary. High levels of decision-making autonomy indicate a lack of integration in the MNE network that may limit the chances of gaining recognition for specialized resources in the innovation process of the subsidiary (Birkinshaw et al., 1998). High levels of decision-making autonomy means more organizational power of an unit (Brooke, 1984), and the more power exercised by sub-units in the MNE network, the less common identity and the less incitement there will be to combine knowledge between the units (Andersson & Holm, 2010). Headquarters' function is to create synergies (Foss, 1997) and to share core competences (Chandler, 1991; Markides, 2002) including the transfer of knowledge. High levels of decision-making autonomy may result in over-confidence of local subsidiary managers and therefore reduce incentives to use and adopt available knowledge and competences from headquarters (Bartlett & Ghoshal, 1989; Blanc & Sierra, 1999; Castellani & Zanfei, 2006; Kuemmerle, 1997).

Moreover, the innovation literature has shown that different technologies and knowledge from different sources are important to the innovation process (Cantwell, 1989, 1992; Frost, 2001; Galunic & Rodan, 1998; Grant, 1996; Kogut & Zander, 1992; Phene & Almeida, 2008; Tsai, 2001). The reason is that when innovating, the existence of different technology and knowledge enhances the possibility of new combinations and thus fosters the likelihood of the emergence of novel ideas (Frost et al., 2002; Phene & Almeida, 2008; Turner & Fauconnier, 1997). Accordingly, the recombination of technological knowledge resources available from both home headquarters and other subsidiaries in other host countries may facilitate a subsidiary to generate new ideas and inventions from this knowledge pool. Therefore, subsidiaries that only use local knowledge without recombining home headquarters knowledge may restrict their possibilities of innovation (Ameida & Phene, 2004). In addition, not all local networks are equally innovative or "rich" in

technological knowledge (Almeida, 1996), whereas technology and knowledge from the headquarters is by definition expected to encompass a rich diversity for the innovation (Phene & Ameida, 2003, 2008). In sum, subsidiaries with increasing levels of decision-making autonomy will lose opportunities of combining knowledge resources and this affects their innovation potential in a negative way.

Second, related to the above argument is the observation that the role of expatriate managers is ignored when subsidiaries have high levels of decision-making autonomy. Expatriate managers are often home-country assignees who hold control and management positions in a foreign subsidiary (Björkman et al., 2004; Edstrom & Galbraith, 1977; Fang et al., 2010; Gammelgaard et al., 2012b; Harzing, 2001). The use of expatriate managers is one of the mechanisms used by the headquarters to implement their strategy and control the foreign subsidiary (Gammelgaard et al., 2012b; Ghoshal & Nohria, 1989; Takeuchi et al., 2008; Tung, 1982), and strengthens the knowledge transfer within the MNE network. These expatriate managers fulfill specific managerial skills not available in local markets (Edstrom & Galbraith, 1977) and thus bring direct personal experience and individual knowledge to the subsidiary (Delios & Björkman, 2000; Goerzen & Beamish, 2007). Additionally, expatriate managers enhance formal and informal inter-unit communication channels. These valuable sources of knowledge facilitate the innovation process of the subsidiary (Dunning, 1993; Gupta & Govindarajan, 2000). Through these roles, expatriate managers have been deemed as successful facilitators in the parent firm knowledge transfer to subsidiaries (Björkman et al., 2004; Bonache, & Brewster, 2001; Fang et al., 2010; Hébert et al., 2005; Kostova & Roth, 2003). High levels of decision-making autonomy of subsidiaries reduce the extent of parent firm knowledge transfer to the subsidiary because of a decrease in the use of expatriate managers. This reduction of parent-firm expatriate managers negatively affects the extent of knowledge transfer from the headquarters, which hinders the innovation process taking place in the subsidiary. Taken together, the headquarters centered view leads us to the following hypothesis:

Hypothesis 1: Increasing levels of subsidiary decision-making autonomy are associated with lower levels of subsidiary innovation.

Although the first perspective centering on the role of headquarters develops a set of arguments predicting a negative relationship between decision-making autonomy and subsidiary innovation (suggesting full control by headquarters is best), business network theorists stress the potential positive effects of higher levels of decision-making autonomy on innovation (Ambos et al., 2011; Birkinshaw et al., 1998). In the business network perspective, each unit's most important resource is the web of specific local relationships in which the subsidiary is embedded (Andersson & Forsgren 1996, 2000; Andersson et al., 2002; Ciabuschi et al., 2011). That is, each subsidiary is embedded in a specific network of business relationships which is more or less distinct from networks of other subsidiaries. Decision-making autonomy enables a subsidiary to develop its own business network (Ambos et al., 2011; Ambos & Schlegelmilch, 2007; Asakawa, 1996), to increase its ability to understand its local business environment (Andersson & Forsgren, 2000; Birkinshaw et al., 1998), and to obtain local business legitimacy (Bartlett & Ghoshal, 1989; Prahalad & Doz, 1987). As a result, it can actively obtain new knowledge and ideas needed to explore new opportunities that foster its innovation potential and outcome (Ambos et al., 2011). Decision-making autonomy thus fosters incentives and opportunities for creativity of local subsidiary managers. This is required for successful innovation because innovation implies risk taking and investments (in time and capital) with only a certain probability of success (Damanpour et al., 2009).

Subsidiaries with decision-making autonomy can make investment decisions required to explore unknown products and processes. Greater decision-making autonomy is also a sign of trust meaning that the headquarters perceives that the subsidiary will perform its tasks competently, will keep its agreements and will not behave opportunistically even when the subsidiary has opportunities and inclinations to do so (Verbeke, 2009). Trust enables subsidiaries to explore new routes outside the domain of its current business activities. Therefore, decision-making autonomy enables subsidiaries to pro-actively develop and maintain its local network of business partners, universities and other research institutes (Andersson & Forsgren, 2000; Birkinshaw et al., 1998; Cantwell & Mudambi, 2005). With decision-making autonomy at the level of the subsidiary, the headquarters offers a necessary condition for subsidiaries to innovate (Ciabuschi et al., 2011a, b). Decision-making

autonomy creates opportunities and incentives to take profitable initiatives (Birkinshaw et al., 1998; Venaik et al., 2005) which are more conducive to creativity, knowledge creation, absorption and assimilation than strict headquarters control. Following business network theory, we develop the following hypothesis:

Hypothesis 2: Increasing levels of subsidiary decision-making autonomy are associated with higher levels of subsidiary innovation.

As becomes clear from these first two hypotheses, extant theory on decision-making autonomy actually and innovation suggest two opposing relationships. The headquarters perspective suggests full control and limited decision-making autonomy is the best way to increase subsidiary innovation, whereas business network theory suggests decision-making autonomy should be maximized. Given the theoretical arguments going in both directions for the effect of decision-making autonomy on subsidiary innovation, we cannot know whether the arguments based on business network theory are dominant over those based on headquarters centered perspective or vice versa. Either may be right. Moreover, which effect dominates may depend on level of decision-making autonomy. The headquarters effect may dominate at *low levels of decision-making autonomy*, whereas the business network effect may dominate at *high levels of decision-making autonomy*, in which case a non-linear U shaped relationship results. It is a priori unclear which effect dominates. We therefore put forward the following hypothesis:

Hypothesis 3: A non-linear relationship exists between subsidiary decision-making autonomy and subsidiary innovation, with increasing levels of decision-making autonomy first leading to decreases in innovation and after a certain level leading to higher levels of innovation.

5.3. Research methods

5.3.1. Survey and sample

We test our hypotheses using data from a unique multi-country, multi-industry database. Our source is a 2011 subsidiary-level survey conducted in the Czech Republic, Hungary, Romania, Poland, and the Slovak Republic by Institute for Economic Research Halle (IWH). This 2011 IWH survey database offered us the opportunity to measure the dependent variable (i.e., subsidiary innovation), the key independent variable (i.e., the decision-making autonomy of subsidiary) as well as headquarters, subsidiary and industry characteristics.

The 2011 IWH survey database is part of a larger project aimed to systematically collect information about innovation activities and the role of foreign investors in former Eastern and Central European (CEE) countries. The overall population of subsidiaries from which the IWH sample is taken from Orbis (broken down per ownership for each country) and consists of foreign-owned manufacturing and service subsidiaries located in the five CEE countries. The selection of these countries in economic transition balances country size, geographic location, and the level of economic development. The population includes different types of foreign investors such as pension funds, banks, foundations, individuals, families, or any combination of these different types of owners.

The IWH database is constructed by means of a survey. The surveys in the various countries were implemented by means of computer assisted telephone interviews (CATI) and executed by the Institute for Applied Social Sciences (IFAS). IFAS is a research institute specialized in doing surveys in CEE countries. A CATI method helps to foster response rates in these CEE countries where managers are less experienced to answer questions from a survey. In order to further increase response rates, the directors of the subsidiaries were first invited to participate in the research via a letter or a brief telephone call. They then received information about the purposes of the survey as well as data confidentiality per fax and/or e-mail upon request. The questionnaire was the same in all countries. It was first tested for coherency to at least four pre-tests per country before being submitted to the subsidiaries between 6 August and 3 September 2009. The final questionnaire required 15 minutes on

average for completion. The IFAS interviewers received intensive training by IWH regional experts concerning innovation and business activities in CEE countries. The interviews were conducted by native speakers from each of the countries under observation. The 2011 IWH survey used selection question for various parts of the survey implying that very few companies answered all questions in the survey. Between 21 September and 16 December 2011 IWH completed the required interviews in line with the sample stratification.

As mentioned in Chapter 4, the relevant IWH database for our research includes 637 observations in the five CEE countries. After correction for missing values because of incomplete responses, the useable final sample in this chapter is 134 for innovation intensity (see below). For innovation intensity, the response rate is 21.03 percent of the 637 contacted subsidiaries. The response rate was highest in Poland (70 observations, 52.24 percent of the final sample) followed by the Czech Republic (24 observations, 17.91 percent), Romania (18 observations, 13.43 percent), the Slovak Republic and Hungary (11 observations for each, 8.21 percent). We performed statistical tests on our sample to discern whether or not there are differences in the distribution of enterprises ordered by firm size, industry and country. Chi-squared tests showed that there are no statistically significant differences both in terms of the number of employees and industry ($p = 0.26$ and $p = 0.32$, respectively). With regard to industry breakdown, the sample contains subsidiaries from all industries at NACE 2 digit level. The observation is restricted to manufacturing industries (NACE Rev.2: 05 to 39) and service industries (NACE Rev.2: 45-47, 49-53, 58-68, and 69-82).

In addition, the IWH also conducted the subsidiary-level survey in East Germany. The survey stages in East Germany were repeated the same as the survey stages in the five CEE countries. The total sample in East Germany consists of 725 subsidiaries that were contacted. Out of this sample, 210 subsidiaries were willing to participate in the interviews, leading to a response rate of 28.97 percent. We use this East-German sample as an additional test (see the next Section).

5.3.2. Dependent variable: subsidiary innovation

Our measure of innovation, defined as "the implementation of a new or significantly improved (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations" (OECD, 2005), is in line with the international standards as codified in the Oslo and Frascati manuals (OECD, 2005). Our study focuses on product innovation of subsidiaries, thus the definition of product innovation in our study as "new or significantly improved products" stems from the Oslo and Frascati manuals (2005) because this is the measurement standard (see Ciabuschi et al., 2011 for a comprehensive review). The interviewed person was provided with additional information following the Oslo and Frascati manuals upon request. As shown in Appendix 5A, we measure subsidiary innovation by means of innovation intensity.[15] We asked for the intensity of innovation by asking the subsidiary manager to approximate the share of a new or significantly improved product in the subsidiary's total sales. This measure for innovation intensity ranges from a minimum of 0 to a maximum of 100.

5.3.3. Independent variable: subsidiary decision-making autonomy

Given the importance of subsidiary decision-making autonomy for the field of international management, it is no surprise that numerous definitions and measures of this term can be found in the literature. Appendix 4E in Chapter 4 provides an overview of 22 studies in which subsidiary decision-making autonomy was the central object of study. We follow extant literature (for example, Birkinshaw & Hood, 2000; O'Donnell, 2000), and assess the

[15] We also measured subsidiary innovation by means of the likelihood of subsidiary innovation. We used Logit regression to estimate the relation between subsidiary decision-making autonomy and the possibility of innovation (a dummy variable based on the question "do you innovate? yes/no"). In addition, we also used this variable to apply the Heckman two-step estimation procedure and estimate the effect of decision-making autonomy on subsidiary innovation intensity conditional on the innovation possibility. We found no empirical support for Heckman two-step procedure as the inverse Mills ration was insignificant. Our Logit estimation did not yield a significant relation between decision making autonomy and subsidiary innovation measured by the innovation possibility. The latter is likely caused by the fact that the vast majority of the firms indicate that they do innovate (87%) reducing the variation considerably. This is an additional reason for us to prefer the OECD based continuous measure of innovation intensity.

level of autonomy with regard to decision-making in business activities of subsidiary through a questionnaire asking the directors of subsidiaries to indicate to what extent independent decisions are currently taken by the subsidiaries or their headquarters on a range of business activities. As shown in Appendix 5B in this chapter, we asked them to do so for seven different business activities on four-point Likert-type scales. These seven areas covered by our indicator include the "main business functions" of any subsidiary. The Cronbach's alpha of 0.83 is satisfactory because it is substantially above the threshold value of 0.70 (Hair et al., 2006). A factor analysis showed that the seven business activities load on one factor (with one eigenvalue larger than 1, i.e. 3.51). We therefore summed individual scale items to construct an aggregate measure of the level of subsidiary's decision-making autonomy. The aggregated index ranges from a minimum of 7 to a maximum of 28. This index means that the higher score of the index, the higher level of a subsidiary's decision-making autonomy.

5.3.4. Control variables

We include three sets of control variables in our model. The first set of control variables accounts for subsidiary characteristics. First, we include the R&D intensity of the subsidiary – measured by the number of R&D employees working in R&D area in subsidiaries currently as a percentage of the subsidiary's total employees – because it is well-known that R&D intensity is an important determinant of a subsidiary's innovative performance (Simões et al., 2002; Taggart & Hood, 1999). Second, we include subsidiary size – measured by the natural logarithm of the number of employees at the subsidiary – because a large subsidiary has more resources and knowledge available that allows for higher innovation (Ciabuschi et al., 2011; Ciabuschi & Martín, 2011). Third, we include the age of the subsidiary – calculated by subtracting the year the subsidiary was founded from the current year – because older subsidiaries may have lower innovation levels than younger ones because of the continued use of outdated knowledge and experience and their resistance to new approaches (Cohen & Levinthal, 1990; Taggart & Hood, 1999).

The second set of control variables concerns the headquarters characteristics. First, we control for the entry mode because the subsidiary's level of innovation in terms of a greenfield investment or an acquisition may be different. We account for this by including a dummy variable that equals one if the subsidiary is a greenfield location, and zero otherwise (Jindra et al., 2009; Slangen & Hennart, 2008; Slangen, 2011). Second, we include the MNE's main entry motive in our model specification, i.e. location-bound knowledge and technology access because the advantage of knowledge and technology in the host country directly affect subsidiary's innovative performance (Dunning, 1993). The aforementioned dimension was ranked according to importance on a four-point Likert scale ranging from completely unimportant to extremely important.

Third, we control for country and industry characteristics. First, we control for industry effects in innovation. For this, we used the broad structure classification of NACE Rev.2 (2008) and classified subsidiaries into (1) mining and quarrying (NACE 05–09), (2) manufacturing (NACE 10–33), (3) electricity; gas, steam and air conditioning supply (NACE 35), (4) water supply; sewerage, waste management and remediation activities (NACE 36–39), (5) wholesale and retail trade; repair of motor vehicles and motorcycles (NACE 45–47), (6) transportation and storage (NACE 49–53), (7) information, communication, financial and insurance activities (NACE 58–68), (8) professional, scientific, technical, administrative and support service activities (NACE 69-82). We constructed seven dummies for the first seven types of industries taking the eighth, i.e., professional, scientific, technical, administrative, and support service activities as the benchmark case. Second, we control for host-country effects. Our subsidiaries operate in five different countries each with its own path-dependent institutional environment affecting firm-level innovation (see the previous Chapters 3 and 4). We therefore constructed four host country dummies, that is, one for the Czech Republic, Romania, Poland and the Slovak Republic, respectively (taking Hungary as the benchmark dummy that was not included in the model). Third, we also control for home-country effects. The headquarters of the subsidiaries in the sample in this chapter stems from 23 different countries. However, including 22 home-country dummies in the model reduces our degrees of freedom, and we therefore include one dummy to differentiate between developing and developed home countries. This admittedly second

best approach is realistic because subsidiaries in developed countries have an advantage of foreignness in innovation through the transfer of product innovations from other parts of the MNE (Un, 2011). In addition, we also argue that headquarters from developed countries (19 countries) by definition may have a stronger inclination to innovate because their competitive environment requires them to do so in order to survive compared to those from developing countries. According to the World Bank, a developed country is defined as a nation having a GDP per capita from US $12,000 per year. We hence constructed one home-country dummy, that is, we distinguished whether the MNE comes from a developed country.

5.3.5. Common method bias

Method biases are a problem since they can be a main source of measurement error (Podsakoff et al., 2003). The latter threatens the validity of the conclusions about the associations between measures and has both a random and a systematic component (Bagozzi & Yi, 1991). Our data for dependent and focal explanatory variables were collected from the same respondents. In such a case, self-report data can create false correlations if the respondents have a propensity to provide consistent answers to survey questions that are otherwise not related. Therefore, common methods can cause systematic measurement errors that either inflate or deflate the observed relationships between constructs, generating both Type I and Type II errors (Chang et al., 2010). We therefore conducted a Harman single factor test a post-hoc statistical procedure to check for common method variance bias. We gained seven factors with eigenvalues over one, explaining between 22.61 and 7.77 percent of variance. This result shows that diversity of factors is captured by the model constructs and a single factor would unlikely explain the covariance in the exogenous and endogenous constructs. In addition, our database is a pooled (cross-sectional) database. The different databases have been constructed from surveys in different countries and then combined into one. Thus, these suggest that common method bias is of no concern in our study.

5.4. Empirical results

5.4.1. Main regression results

Means, standard deviations and correlations for innovation intensity are provided in Table 5.1. We measure the innovation intensity by means of the percentage of new or significantly improved products in the subsidiary's total sales for which Tobit estimates are appropriate (Wooldridge, 2002).

The results from the Tobit regression models with respect to innovation intensity are shown in Table 5.2. In preparing the data for the regression analysis, we performed the usual tests to obtain reliable estimates (Hair et al., 2006). The latter yielded satisfactory results: neither heteroskedasticity nor non-normality is an issue. All correlation coefficients are maximum 0.48 indicating that there are no issues with multicollinearity. We tested for multicollinearity by calculating the variance inflation factor (VIF) for each of the regression coefficients. Except for the squared terms, the VIF values for all variables in the model are below 4.0 and thus well below the cut-off value of 10 (Hair et al., 2006).

Table 5.1. Statistical description and correlations: the dependent variable is innovation intensity (n = 134)[a]

	Mean	S.D	1	2	3	4	5	6	7	8	9	10	11	12
1. Innovation intensity (%)	20.7	18.1												
2. R&D intensity (%)	0.11	0.20	0.33**											
3. Size of subsidiary (log)	4.5	1.25	−0.00	−0.23**										
4. Age of subsidiary	13.5	9.75	−0.01	−0.11	0.19*									
5. Parent's entry mode (greenfield)	0.60	0.49	−0.01	0.03	−0.17*	0.21*								
6. Parent's motive to access location-bound knowledge and technology	2.21	1.05	0.12	0.06	0.01	0.00	−0.06							
7. Host country dummy (the Czech Republic)	0.17	0.38	0.17*	0.01	0.15	−0.05	−0.13	0.18*						
8. Host country dummy (Romania)	0.13	0.34	−0.06	−0.09	0.12	−0.03	0.05	−0.20	−0.18*					
9. Host country dummy (Poland)	0.52	0.50	−0.05	0.07	−0.19*	0.07	0.08	−0.01	−0.48**	−0.41**				
10. Host country dummy (the Slovak Republic)	0.08	0.27	0.07	0.03	−0.09	−0.01	−0.09	−0.06	−0.13	−0.11	−0.31**			
11. Home country dummy (developed country)	0.92	0.26	0.02	−0.00	0.01	0.02	0.11	−0.07	−0.01	−0.13	0.12	−0.01		
12. Decision-making autonomy	19.4	4.24	−0.21*	−0.05	−0.07	−0.10	−0.18*	−0.08	−0.19*	0.19*	0.09	−0.12	0.05	
13. Decision-making autonomy squared	396.9	169.7	−0.17*	−0.02	−0.05	−0.11	−0.17*	−0.10	−0.17*	0.21*	0.07	−0.11	0.05	0.99

[a] All seven industry dummies are included and their correlation is maximum 0.35. *p<0.05; **p<0.01.

Table 5.2. The effect of decision-making autonomy on innovation intensity (Tobit estimates)[a]

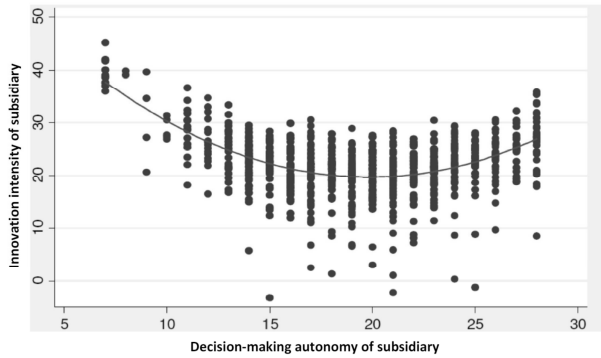
	Innovation intensity			
	(1)	(2)	(3)	Marginal effect
Constant	−5.99 (11.3)	12.2 (13.8)	85.9 (30.7)**	
Control variables				
R&D intensity (%)	30.8 (7.69)**	29.3 (7.59)**	24.5 (7.62)**	17.7 (5.57)**
Size of subsidiary (log)	2.12 (1.37)	1.76 (1.35)	0.88 (1.36)	0.64 (0.98)
Age of subsidiary	0.01 (1.15)	−0.01 (0.15)	0.03 (0.15)	0.02 (0.10)
Parent's entry mode (greenfield)	0.54 (3.16)	−1.30 (3.22)	−2.26 (3.17)	−1.64 (2.32)
Parent's motive to access location-bound knowledge and technology	1.35 (1.42)	1.24 (1.40)	1.79 (1.38)	1.29 (1.00)
Host country dummy (the Czech Republic)	14.7 (6.14)*	13.2 (6.08)*	11.6 (5.96)*	9.14 (5.02)*
Host country dummy (Romania)	6.93 (6.50)	8.80 (6.44)	7.64 (6.31)	5.89 (5.15)
Host country dummy (Poland)	7.69 (5.51)	8.03 (5.41)	8.28 (5.29)	5.95 (3.78)
Host country dummy (the Slovak Republic)	13.8 (7.26)	11.8 (7.19)	10.3 (7.06)	8.23 (6.07)
Home country dummy (developed country)	1.54 (5.56)	3.00 (5.51)	2.79 (5.38)	1.95 (3.65)
Main variables				
Level of subsidiary's decision-making autonomy		−0.80 (0.36)*	−8.09 (2.75)**	−5.85 (2.00)**
Level of subsidiary's decision-making autonomy squared			0.18 (0.06)**	0.13 (0.04)**
N	134	134	134	
LR Chi squared	29.09	33.85	40.85	
Chi squared	-	4.76**	11.76**	
Log likelihood	−559.48	−557.10	−553.60	
P_value	0.010	0.001	0.000	

[a]Standard errors are listed in parentheses. All seven industry dummies are included, but none of these are significant. *p<0.05; **p<0.01.

The various fit parameters show that our models increasingly fit the data better. Regarding innovation intensity, Table 5.2 shows that the log likelihood value improves from –559.48 in Model 1 to –553.60 in Model 3. This improvement in model fit is significant (△ Chi squared = 11.76, $p < 0.01$). Also, the estimates remain robust in terms of sign and significance levels. In Model 1 of Table 5.2, innovation intensity was regressed on our control variables. In Model 2, the level of decision-making autonomy was included. The results show that the level of decision-making autonomy is negatively and significantly related to subsidiary innovation ($\beta = -0.80$, $p < 0.05$), providing support for our first hypothesis and rejecting our second hypothesis. In Model 3 however, we entered the squared decision-making autonomy term to test for the non-linear effect as hypothesized in Hypothesis 3. The empirical results confirm that the parameter estimates for subsidiary decision-making autonomy and subsidiary decision-making autonomy squared are significant, leading us to find support for our Hypothesis 3. We find that subsidiary decision-making autonomy is negatively and significantly related to innovation intensity ($\beta = -8.09$, $p < 0.01$), and the squared decision-making autonomy term positively and significantly related to innovation intensity ($\beta = 0.18$, $p < 0.01$). We find a U-shaped relationship between subsidiary decision-making autonomy and innovation intensity. The inflexion point for innovation intensity is estimated at 22.5, in between the observed range of levels of decision-making autonomy. This means that when a subsidiary has this level of decision-making autonomy, the intensity of innovation would be lowest. However, if a subsidiary has a lower or higher degree of decision-making autonomy than this level, the subsidiary's innovation intensity will be higher. This is graphically illustrated in Figure 5.1. The last column in Table 5.2 presents the marginal effect of decision-making autonomy on the innovation intensity of subsidiary. The marginal effect analysis shows that R&D intensity has the largest effect on subsidiary innovation followed by decision-making autonomy.

The results we obtained for our control variables were as expected. Table 5.2 shows that a higher R&D intensity has a significant and positive effect on innovation intensity (with $\beta = 24.5$, $p < 0.01$). In addition, the result indicates that subsidiaries located in the Czech Republic have a significant and positive impact on the intensity of innovation compared to the subsidiaries in Hungary (with $\beta = 11.6$, $p < 0.05$).

Figure 5.1.The effect of subsidiary's decision-making autonomy on innovation intensity



5.4.2. Robustness analyses

To explore the robustness of the above finding on innovation intensity, we perform several additional analyses, whose results are summarized in Panels B through E of Table 5.3. To facilitate the comparison with our earlier findings, Panel A repeats our most important initial results (i.e., those from Model 3 of Table 5.2).

First, in Panel B we estimated the models for innovation intensity (Tobit estimates) with an alternative measurement for our key independent variable, i.e. subsidiary decision-making autonomy. Recall that our subsidiary decision-making autonomy measure is constructed as an index of decisions concerning seven different business activities. As with any multi-dimensional construct, we performed a factor analysis on the different business activities. This test reported one factor (as described earlier in the research method section).

Table 5.3. Results of additional analyses for the effects of decision-making autonomy on innovation intensity[a]

	Original results	Additional tests			
	Panel A: Initial results extracted from Table 4 [Model (3)]	Panel B: DMA measured by factor scores	Panel C: Controlling R&D intensity dummy instead of R&D intensity	Panel D: Including German domestic subsidiaries	Panel E: DMA measured only by research and innovation
Constant	85.9 (30.7)**	−2.80 (10.9)	82.8 (18.6)**	64.2 (18.1)**	26.6 (17.5)
Control variables					
R&D dummy	–	–	0.39 (2.38)	–	
R&D intensity (%)	24.5 (7.62)**	24.6 (7.62)**	–	0.02 (0.31)	29.6 (7.56)
Size of subsidiary (log)	0.88 (1.36)	0.90 (1.36)	−0.82 (1.05)	−1.47 (0.94)	1.91 (1.34)
Age of subsidiary	0.03 (0.15)	0.03 (0.15)	0.15 (0.12)	−0.08 (0.11)	0.02 (0.15)
Parent's entry mode	−2.26 (3.17)	−2.22 (3.16)	1.59 (2.47)	−1.63 (2.40)	−1.49 (3.24)
Parent's motive to access location-bound knowledge and technology	1.79 (1.38)	1.80 (1.38)	0.36 (1.07)	2.04 (1.04)	1.56 (1.41)
Host country dummy (the Czech Republic)	11.6 (5.96)*	11.7 (5.96)*	11.3 (4.26)**	14.8 (7.42)*	12.2 (6.11)*
Host country dummy (Romania)	7.64 (6.31)	7.71 (6.31)	5.97 (4.21)	6.22 (7.82)	4.90 (6.49)
Host country dummy (Poland)	8.28 (5.29)	8.32 (5.29)	9.11 (3.46)	8.93 (6.61)	7.63 (5.41)
Host country dummy (the Slovak Republic)	10.3 (7.06)	10.4 (7.05)	10.2 (4.53)	11.6 (8.76)	12.6 (7.14)
Host country dummy (East Germany)	–	–	–	10.3 (6.45)	
Home country dummy (developed country)	2.79 (5.38)	2.90 (5.38)	−0.19 (4.35)	−2.19 (3.92)	0.52 (5.49)
Main variables					
Level of subsidiary's decision-making autonomy	−8.09 (2.75)**	−5.02 (1.76)**	−6.62 (1.75)**	−4.31 (1.60)**	−22.2 (9.65)*
Level of subsidiary's decision-making autonomy squared	0.18 (0.06)**	4.18 (1.55)**	0.15 (0.04)**	0.10 (0.04)*	3.85 (1.80)*
N	134	134	277	344	134
LR Chi squared	40.85	33.75	31.93	39.03	34.78
Log likelihood	−553.60	−557.1	−1174.5	−1488.5	−556.63
P_value	0.000	0.005	0.010	0.006	0.006

[a] Robust standard errors are listed in parentheses. All seven industry dummies are included, but none of these are significant. *p<0.05; **p<0.01.

As a test for robustness we estimated our Tobit models with the factor score for decision-making autonomy of subsidiary. This did not affect the regression results (with $\beta = -5.02$, $p < 0.01$ for decision-making autonomy, and $\beta = 4.18$, $p < 0.01$ for decision-making autonomy squared).

Second, in Panel C we estimated the Tobit models using a R&D dummy as a control variable instead of controlling for the presence of R&D by means of our continuous measure of R&D intensity. The reason for using a dummy is that our data for R&D intensity is only limited available. The use of a dummy increases the number of observations from 134 (for R&D intensity) to 277 (for R&D by means of a dummy). The regression results on this larger sample are however the same (with $\beta = -6.62$, $p < 0.01$ for decision-making autonomy, and $\beta = 0.15$, $p < 0.01$ for decision-making autonomy squared).

Third, next to subsidiary level information for the five eastern European countries, we have additional data for subsidiaries located in former East Germany. We estimated the models including East German subsidiaries, meaning that we consider East Germany as a (sixth) host country. The reason to include East Germany is that the East German context still resembles the ones in the five central and eastern European countries. Studies on transition economies often exclude East Germany because of theoretical and empirical difficulties derived from the fact that it became subsumed into a larger and more mature economy (Giroud et al., 2012; Günther et al., 2008; Tunzelmann et al., 2010). There is however still quite a big difference with respect to West Germany in terms of technology, industrial structure and investment which affects the organizational structure and innovation of business units. Including East German subsidiaries in our sample (we go from 134 observations to 344), we obtain similar regression results in panel D (with $\beta = -4.31$, $p < 0.01$ for decision-making autonomy, and $\beta = 0.10$, $p < 0.05$ for decision-making autonomy squared).

Fourth, recall that our subsidiary decision-making autonomy measure is constructed as an index of decisions concerning seven different business activities. Thus, our subsidiary decision-making autonomy measure index does not necessarily relate to knowledge related activities of the subsidiary. For that reason, we estimated our Tobit regressions with decision-making autonomy referring to only one, i.e. decisions regarding research and

innovation (see Appendix 5B). The results in Panel E are the same (with $\beta = -22.2$, $p < 0.05$ for decision-making autonomy, and $\beta = 3.85$, $p < 0.05$ for decision-making autonomy squared). These robustness tests corroborate our main findings and provide further support for our finding on a non-linear, U-shaped, relationship between autonomy and innovation.

5.5. Discussion and conclusions

This chapter theoretically advances our understanding of subsidiary innovation by building on business network theory and headquarters functions to predict a non-linear relationship between the degree of decision-making autonomy of subsidiary and innovation. Building on a dataset of 134 subsidiaries in the Czech Republic, Hungary, Poland, Romania and the Slovak Republic from 23 home countries, our empirical results show that the degree of decision-making autonomy of subsidiaries is negatively associated with the intensity of innovation until at a certain cut-off point. This finding is in line with the perspective centering on the headquarters functions (Ciabuschi et al., 2012; Ciabuschi et al., 2011a; Forsgren & Holm, 2010). However, we also find that a subsidiary's innovative output will increase when a subsidiary has a level of decision-making autonomy higher than this cutoff point, a finding in line with the arguments put forward by business network theorists (Barlett & Ghoshal, 1989; Ciabuschi & Martín, 2011; Venaik et al., 2005). This latter finding is also in line with our theoretical argument that greater decision-making autonomy positively affects the motivation of subsidiary managers to take initiatives, to acquire knowledge and to integrate in the host country (Ciabuschi et al., 2011; Forsgren, 2008; Forsgren et al., 2005; Forsgren & Holm, 2010) and to enhance the firm's ability to understand the local business environment (Andersson & Forsgren, 2000; Birkinshaw et al., 1998). An increased level of subsidiary decision-making autonomy is associated with a higher level of innovation at the subsidiary contributing towards firm specific-advantages at global level (Birkinshaw et al., 1998). Taken together, our results imply that either low or high levels of decision-making autonomy are associated with subsidiary innovation. Establishing such a non-linear effect of decision-making autonomy on subsidiary innovation is new, and presents a new insight for international management scholars and practitioners.

Before we derive the implications of our findings, we should first discuss two limitations of our study that could serve as routes for follow up research. First, our study treated the degree of decision-making autonomy of subsidiary in a static way. However, headquarters-subsidiary relationships tend to steadily evolve and are characterized by a continuous bargaining process over positions in the firm (Mudambi & Navarra, 2004). These relationships also result in changing power positions over time (Ambos et al., 2011). Therefore, future work could follow Gammelgaard et al. (2012a) and take a dynamic perspective on subsidiary decision-making autonomy. Second, organization theorists have argued that two types of organizational tension exist: an autonomy-control tension (Pfeffer & Salancik, 1978) and an information-processing tension (Galbraith, 1977; Egelhoff, 1982). The former relates to "the extent to which autonomy is granted by the headquarters to the subsidiaries" (Asakawa, 1996, 2001). The latter infers to "the degree of information-sharing between the parent and local units" (Asakawa, 2001; De Meyer, 1993; Teece, 1977). Although our decision-making autonomy measure captured the degree of decision-making by the subsidiaries, these types of tensions are not taken into account. That is, neither "granted" nor "obtained" autonomy is explicitly considered. We recommend that future work examine these aspects in more detail.

In spite of these limitations, our study implies that higher levels of subsidiary innovation are associated with either a situation in which subsidiaries have relatively high levels of decision-making autonomy or almost no decision-making autonomy (i.e. full control by headquarters). This implication fits both business network theory and the complementary perspective centering on the function of headquarters. It is important for multinational firms to arrive at an appropriate level of decision-making autonomy for their subsidiaries, because as our study shows, intermediate levels of decision-making autonomy are likely to lead to suboptimal levels of subsidiary innovation.

APPENDIX

5A. Measure of dependent variable: Subsidiary innovation (taken from the questionnaire)

Subsidiary innovation intensity

Please approximate the share of new or significantly improved product(s) introduced during 2009 to 2011 in the total sales of your enterprise in 2011.

	2011
Share of new or significantly improved product(s) in total sales (in %)	

Note: During the survey, the interviewed subsidiary was explained that product innovation refers to the *"introduction"* of new and significantly improved products by the subsidiary.

5B. Measure of key independent variable: Subsidiary decision-making autonomy (taken from the questionnaire)

Please indicate to which extent independent decisions in the following business activities are currently taken by your enterprise or your headquarters. Please choose between four-point scales: Decisions are taken 1) only by your headquarters, 2) mainly by your headquarters, 3) mainly by your enterprise or 4) only by your enterprise.

	Only by your headquarters	Mainly by your headquarters	Mainly by your enterprise	Only by your enterprise
Finance and investment				
Strategic management				
Operational management				
Marketing and market research				
Purchases and supplies				
Distribution and sales				
Research and innovation				

Chapter 6

Subsidiary innovation, decision-making autonomy, and internal and external embeddedness

6.1. Introduction

The number of studies on the role of subsidiary embeddedness for subsidiary and MNE performance has evolved rapidly in the recent years (Andersson et al., 2001, 2002, 2007; Ambos et al., 2011; Ciabuschi et al., 2011; Dellestrand, 2011; Figueiredo, 2011; Santangelo, 2012; Yamin & Andersson, 2011). Subsidiary embeddedness is increasingly viewed as an important source for creating new knowledge contributing to the innovation success of the subsidiary and the multinational enterprise (MNE) (Forsgren et al., 2005). Despite all efforts, however, the embeddedness-innovation (E-I) relationship is still subject of ongoing debate (Meyer et al., 2011; Garcia-Pont et al., 2009). On the one hand, the headquarters view suggests that subsidiaries should embed in MNE internal networks to obtain benefits from sister subsidiaries or headquarters about knowledge and resources. The latter enhances the likelihood of a subsidiary's innovation. On the other hand, according to business network theory, embeddedness in host country enables subsidiaries to improve learning ability and reap external knowledge from local partners in generating for innovation. Subsidiaries are confronted with a need to be simultaneously embedded in internal and external

embeddedness, a challenge that has been referred to as dual embeddedness (Figueiredo, 2011).

The previous chapter directly linked subsidiary innovation and decision-making autonomy. We established a U shaped effect. The mechanism linking innovation and decision-making autonomy can be argued to be related to the degree of subsidiary embeddedness. In the subsidiary literature, both internal and external embeddedness are associated with innovation, yet also in interaction with decision-making autonomy. There is a direct relation between embeddedness and innovation because embeddedness in the MNE's internal network and the local external network are both good for innovation according to business network theory. The question rises how the U-shaped relationship we found between decision-making autonomy and subsidiary innovation is affected when explicitly controlling for subsidiary embeddedness. We may expect the U shape to become more pronounced for higher levels of internal and external embeddedness. The reason for such an indirect effect of embeddedness is that when internal or external embeddedness is high, the pressure for headquarters to take control or for subsidiaries to make decisions becomes more important. When the MNE network is not important (and the need for internal embeddedness is low) or when the local external network is not important (and the need for external embeddedness is low), the importance of decision-making autonomy for subsidiary innovation is reduced. Alternatively, when the local MNE network or the local external network becomes more important, the need for internal or external embeddedness increases, and the question on who takes decisions (headquarters or subsidiary) becomes more and more relevant. Given our previous finding that it is optimal for subsidiary innovation to either have headquarters or subsidiaries take decisions, we may expect that the U-shaped relation between decision-making autonomy and subsidiary innovation becomes more pronounced at higher levels of internal and external embeddedness. We thus test for the role of internal and external embeddedness on the relationship between subsidiary decision-making autonomy and subsidiary innovation.

We test our models on 95 subsidiaries located in five European countries. We find that the degree of external embeddedness of subsidiaries plays an important role in influencing the U-shaped relation between decision-making autonomy and subsidiary

innovation. Our empirical test supports our hypothesis that the U-shaped relation between decision-making autonomy and subsidiary innovation becomes more pronounced at higher levels of external embeddedness. In particular, we find that at the mean value of external embeddedness the relation between decision-making autonomy and subsidiary innovation is U shaped. When external embeddedness increases, the U-shaped relationship between decision-making autonomy and subsidiary innovation becomes steeper and more pronounced. However, we also find that when external embeddedness decreases to one standard deviation below the mean (external embeddedness has a score of –1 because it is standardized), the U-shaped relationship between subsidiary decision-making autonomy and innovation disappears. Our results imply that to obtain an optimal level of subsidiary innovation, headquarters either should let subsidiaries full decision-making autonomy or give almost no decision-making authority, especially when the subsidiaries highly embed in external networks in the host country.

The outline of this chapter is as follows. We begin by reviewing research in two areas that serve as the foundation for our contingency framework of subsidiary innovation: business network theory (Andersson & Forsgren, 1996; Andersson et al., 2007) and the role of headquarters (Ciabuschi et al., 2012; Ciabuschi et al., 2011a, b). Next, building on this theoretical background, we formulate our hypotheses. Then, we introduce this chapter's research methodology, addressing issues related to our measures of the variables and estimation methods. Following that, we present our empirical evidence. Finally, we discuss limitations and offer a reflection on opportunities for future research as well as implications.

6.2. Theory and hypotheses

To develop our hypotheses, we use insights from two leading theories in IB research, that is, the perspective centering on the role of headquarters (Ciabuschi et al., 2012; Ciabuschi et al., 2011a, b; Forsgren & Holm, 2010) and business network theory (Andersson et al., 2007; Forsgren et al., 2005). In the business network literature, the embeddedness of a subsidiary partly explains its innovation (Andersson et al., 2002, 2007; Ciabuschi et al., 2011; Forsgren et al., 2005; Yamin & Andersson, 2011). Embeddedness is defined as "closeness in a

relationship"; it reflects the intensity of information exchange and the extent to which resources between the parties in the dyad are adapted (Andersson et al., 2001: 1016). According to business network theory, the economic activities of a subsidiary occur both externally and internally, i.e., within the MNE network. The embeddedness of a subsidiary is therefore addressed by means of two different aspects: internal and external embeddedness of a subsidiary (Forsgren et al., 2005). Internal embeddedness refers to the extent to which a subsidiary's activities and resources are actualized through relationships with other corporate actors in the MNE network (Andersson & Forsgren, 1996; Ciabuschi et al., 2011). Internal embeddedness potentially provides the subsidiary financial support, management resources, and competences from other subsidiaries and from the headquarter, while at the same time also facilitating MNE leverage of local knowledge and capabilities as they are available for transfer (Andersson et al., 2002, 2007; Rugman & Verbeke, 2001). External embeddedness infers to the extent to which a subsidiary is embedded in a local business network (Andersson et al., 2002), that is, the extent to which a subsidiary establishes and maintains business linkages with external actors vis-à-vis other MNE units (Hallin et al., 2011). External embeddedness allows the subsidiary to reap local market opportunities and foster the subsidiary's competences and market performance (Andersson et al., 2002; Santangelo, 2012).

6.2.1. Internal embeddedness and subsidiary innovation

The perspective focusing on the role of a headquarters assumes that the interference of a headquarters in the innovation process of the subsidiary is best (Ciabuschi et al., 2011; Ciabuschi et al., 2012; Ciabuschi et al., 2011a, b). It can be argued that a high level of subsidiary internal embeddedness increases the volumes of firm-specific strategic resources between actors enhancing subsidiary innovation (Figueiredo, 2011; Garcia-Pont et al., 2009). There are two main explanations for a positive relationship between internal embeddedness and subsidiary innovation.

First, a high level of internal embeddedness indicates a greater level of headquarters involvement in subsidiary operations (Ciabuschi et al., 2011) triggering attention (Andersson

et al., 2007) and strengthening resource and knowledge support in the innovation process. Headquarters with strong ties to a subsidiary have an in-depth understanding of resource gaps at the subsidiary and know how to efficiently organize the innovation process (Ciabuschi et al., 2011b). Headquarters involvement is oftentimes induced by means of expatriate managers. Expatriate managers can facilitate knowledge transfer within the MNE network because they have MNE specific managerial skills not available in local markets (Edstrom & Galbraith, 1977). They bring relevant firm-specific experience and knowledge to the subsidiary (Delios & Björkman, 2000; Goerzen & Beamish, 2007). Additionally, expatriate managers enhance formal and informal inter-unit communication within the MNE network. Through these roles, expatriate managers have been deemed as successful facilitators in the parent firm knowledge transfer to subsidiaries (Björkman et al., 2004; Bonache, & Brewster, 2001; Fang et al., 2010; Hébert et al., 2005; Kostova & Roth, 2003), fostering the innovation process of a particular subsidiary (Dunning, 1993; Gupta & Govindarajan, 2000).

Second, the business network literature indicates that high levels of internal embeddedness are likely to increase the possibility to successfully access and combine resources from corporate counterparts (Ciabuschi et al., 2011; Forsgren et al., 2005). The more internally embedded a subsidiary is, the stronger its cooporative ties and relationships with other subsidiaries in the MNE network are (Tsai & Ghoshal, 1998; Yamin & Andersson, 2011). This increases the subsidiary's opportunity to use and combine relevant resource and knowledge controlled by other corporate actors (Ciabuschi et al., 2011). With the virtue of the membership in the same organization, the partners in the MNE network are tied and know each other (Gupta & Govindarajan, 2000). High levels of internal embeddedness aligns with high levels of trust between the focal subsidiary and other affiliates as well as between the focal subsidiary and the headquarters fostering the inclination to participate in innovation sharing risks and reducing uncertainty (Szulanski, 1996; Gupta & Govindarajan, 2000). Thus, we put forward the following hypothesis:

Hypothesis 1: Internal embeddedness will have a positive effect on subsidiary innovation.

6.2.2. External embeddedness and subsidiary innovation

Business network theory (Andersson & Forsgren, 1996; Andersson et al., 2001; Andersson et al., 2001, 2002, 2007; Forsgren, 2008; Forsgren et al., 2005; Hallin et al., 2011) proposes that networks exist both within the multinational enterprise and in the local environment of the subsidiary. Subsidiaries differ in terms of their history, quality and level of linkages inside and outside the MNE (Forsgren et al., 2005). Linkages also may evolve over time developing from those characterized by arm's length interactions to relationships based on mutual trust, adaptation and the willingness to make relation-specific investments needed for successful innovation (Lane & Lubatkin, 1998; Uzzi, 1996, 1997). Relationships with other business and institutional actors are important because through the mutual adaptation process with counterparts, subsidiaries develop technological and organizational competencies that strengthen the use of dispersed resources and enable new knowledge flows at the subsidiary and within the MNE (Andersson et al., 2002; Gulati, 1998; Gulati et al., 2000). Adopting the business network approach, we argue that a high level of external embeddedness is likely to enhance subsidiary innovation. Two main explanations can be given for this hypothesized positive relationship.

First, a high level of external embeddedness is likely to enable a subsidiary to incorporate valuable resources from external network (Ambos et al., 2011; Andersson et al., 2005; Andersson & Forsgren, 1996, 2000) and foster learning opportunities (McDonald et al., 2008; McEvily & Zaheer, 1999; Tsai & Ghoshal, 1998). The nature of a subsidiary's external relationships is one important aspect of embeddedness. A high level of external embeddedness implies strong ties and intensive interactions between a subsidiary's and specific local customers, suppliers, competitors, research institutions and other counterparts. Through these ties and interactions, the level of information exchange and opportunities for new information identification is substantially fostered (Andersson et al., 2005; Andersson et al., 2002; Hansen, 1999; Lane & Lubatkin, 1998). These strengthen the learning abilities of the subsidiary (Uzzi, 1997) and improve the subsidiary's capability to assimilate new information (Andersson et al., 2002; Santangelo, 2012; Yamin & Andersson, 2011). As a result, valuable resources and learning opportunities that support subsidiary innovation

accumulate. From a different perspective, a lack of external embeddedness is likely to lead to outdated knowledge, a decrease in valuable resources and a decline in up-to-date and relevant information. As a consequence, a subsidiary with low levels of embeddedness may suffer losses of new technology updating and of learning improvement, both hampering the subsidiary's innovation (Andersson et al., 2001).

Second, several scholars argue that a subsidiary with high levels of external embeddedness have extensive relationships with suppliers, customers, and other agents in its business network (Andersson, 1996, 2000; Andersson et al., 2002, 2005; Yamin & Andersson, 2011). These relationships bring two benefits to the subsidiary innovation process, at least. The first benefit is that actors in the network are willing to share new knowledge about recent technological opportunities and allow access to other resources (Andersson et al., 2005; Andersson et al., 2001; Forsgren, 1997). Especially the process of new knowledge exchange becomes easier because of high levels of mutual understanding and optimal cognition (Grant, 1996; Hansen, 1999). By combining valuable resources and new knowledge, subsidiaries are likely to create new ideas, invent new business initiatives with new directions, and develop new technologies that are all conducive to innovation (Andersson et al., 2007; McDonald et al., 2008; Zander & Kogut, 1995; Yamin & Andersson, 2011). Another benefit is that high levels of external embeddedness align with high levels of trust and better adaption and cooperation between actors in the network that foster relation-specific investments. As a result, the possibilities and opportunities of investments for innovation improve. The subsidiary literature also asserts that close relationships help subsidiaries to have a better understanding of customer needs and supplier abilities (Kotler & Armstrong, 1991), which are acknowledged drivers for continuous innovation. From these perspectives, we propose the following hypothesis:

Hypothesis 2: External embeddedness will have a positive effect on subsidiary innovation.

6.2.3. Decision-making autonomy, embeddedness and subsidiary innovation

In the previous chapter, we found that a U-shaped relationship exists between decision-making autonomy and subsidiary innovation. The theoretical arguments of Chapter 5 imply that subsidiaries with intermediate degrees of decision-making autonomy have sub-optimal technological capabilities, resources and knowledge needed for innovation. The reason is that they are less likely to receive benefits from headquarters or from external partners. Subsidiaries with intermediate degrees of decision-making autonomy are less likely to innovate than those with either low or high degrees of decision-making autonomy. Our argumentation in Chapter 5 excluded the role of embeddedness. However, as we argue below, the impact of decision-making autonomy on subsidiary innovation can be argued to be conditional on the level of embeddedness. We can expect the U-shaped relation between decision-making autonomy and innovation to be more pronounced at higher levels of embeddedness. Hence, next to the direct effects of embeddedness, there is an indirect channel through which embeddedness affects subsidiary innovation as well.

Our arguments on the relation between decision-making autonomy and innovation were derived from the headquarters view and business network theory. We argued in Chapter 5 that the headquarters view argues that too high levels of decision-making autonomy will be associated with subsidiary innovation in a negative way, whereas the latter view leads us to predict a positive association between innovation and decision-making autonomy at the subsidiary level. The underlying yet implicit assumption is that both internal and external embeddedness play a role in this relationship. The headquarters view stresses the importance of being embedded in an internal network which can be optimized when headquarters takes decisions. Business network theory assumes that both internal and external embeddedness are important and for that reason it is best to give subsidiaries autonomy to make their own decisions. In both cases, the implicit assumption is that embeddedness is important, either internal or external. The relation between decision-making autonomy, embeddedness and subsidiary innovation that remained implicit in the previous chapter is one we wish to explicitly explore here.

Theoretically we expect the U-shaped relation between subsidiary decision-making autonomy and innovation to become more pronounced for higher levels of internal and external embeddedness. The reason is straightforward: when internal or external embeddedness is high, the pressure for headquarters to take control or have subsidiaries make decisions becomes more important. When the internal MNE network is not important (and a corresponding low degree of internal embeddedness) or when the local external network is not important (and a corresponding low degree of external embeddedness), the importance of decision making autonomy for innovation is reduced. Alternatively, when the internal MNE network or the local external network becomes more important, the need for internal or external embeddedness increases, and the question on who takes decisions (headquarters or subsidiary) becomes more and more relevant. Given our finding in Chapter 5 that it is optimal for subsidiary innovation to either have headquarters take decisions or have subsidiaries take decisions, we can expect that the U-shaped relation between DMA and innovation becomes more pronounced at higher levels of embeddedness. This is our third hypothesis:

Hypothesis 3a: The U-shaped relationship between subsidiary decision-making autonomy and subsidiary innovation becomes more pronounced at higher levels of internal embeddedness.

Hypothesis 3b: The U-shaped relationship between subsidiary decision-making autonomy and subsidiary innovation becomes more pronounced at higher levels of external embeddedness.

6.3. Research methods

6.3.1. Survey and sample

We test our hypotheses using the 2011 Institute for Economic Research Halle (IWH) FDI micro database (for methodological details see Günther et al., 2011). The 2011 IWH firm-

level survey is conducted in the Czech Republic, Hungary, Romania, Poland, and the Slovak Republic. The survey offered us the opportunity to measure the key variables of our model as well as various headquarters, subsidiary and industry characteristics that serve as controls. The survey database is constructed in various steps. The population from which the sample is taken consists of foreign owned manufacturing and service subsidiaries located in the aforementioned Central and Eastern European (CEE) countries. The selection of these regions in economic transition balances country size, geographic location, and the level of economic development. IWH surveys use Orbis to identify subsidiaries for foreign investors in the CEE countries. The IWH questionnaire was designed and a survey was implemented to optimize the chances of satisfactory response rates (Dillman, 2000). The survey was implemented by means of computer assisted telephone interviews (CATI). The subsidiary managers were invited to participate in the survey via a letter or personal phone call. They then received information about the purpose of survey and were ensured data confidentiality. Choosing subsidiary managers as respondents is important given the focus of the research on subsidiary innovation, embeddedness and decision-making autonomy. The questionnaire was tested for coherency before being submitted to at least four pre-tests per country. The pre-test necessitated minor changes and resulted in a questionnaire that required approximately 15 minutes on average for completion. The interviews were executed by native speakers from a research institute specialized in firm-level surveys in the CEE countries and received intensive training about the main subjects of the survey. 287 Subsidiary managers answered the questions relevant for our study (with 121 observations in Poland, 67 in Czech Republic, 38 in Romania, 35 in the Slovak Republic, and 26 in Hungary). We use 95 observations after deleting cases with missing values. With regard to industry breakdown, the sample contains firms from manufacturing industries (NACE Rev.2: 05 to 39) and service industries (NACE Rev.2: 45-47, 49-53, 58-68, and 69-82). Across industries there were no statistically significant differences in terms of the number of employees and regional distribution ($p = 0.26$ and $p = 0.32$, respectively).

6.3.2. Dependent variable: subsidiary innovation

Following up the previous chapter, this chapter also applies the well-known OECD (2005) definitions and measures of innovation that are in line with the international standards as codified in the Oslo and Frascati manuals (OECD, 2005) and most commonly used in innovation studies. Innovation is defined as "the implementation of a new or significantly improved (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations". We measure subsidiary innovation as innovation intensity (see Appendix 5A in Chapter 5 for measurement details). We measure the intensity of innovation by asking the subsidiary to approximate the share of a new or significantly improved product in the subsidiary's total sales. This measure of innovation intensity ranges from a minimum of 0 to a maximum of 100.

6.3.3. Key independent variables

Internal and external embeddedness

Before measuring internal and external embeddedness, we carefully performed a factor analysis on the six items concerning internal and external embeddedness to discern whether or not they cluster on one or more dimensions. A principal component factor analysis with varimax rotation (see Appendix 6B, 6C, and 6D in this chapter) reported two factors with eigenvalues larger than 1 (i.e., 2.42 and 1.18 for factor 1 and factor 2, respectively). The indicators nicely divided themselves into two principal components that reflect external and internal embeddedness.

Internal embeddedness reflects the subsidiary's relationships with the headquarters or with sister affiliates (Ciabuschi et al., 2011; Hallin et al., 2011; Yamin & Andersson, 2011). The subsidiary managers were asked to indicate the importance of these relationships for subsidiary innovation on a four-point Likert scale (see Appendix 6A in this chapter). A principal component factor analysis showed that the two items load on one factor with one eigen-value larger than 1 (see Appendix 6B in this chapter). The Cronbach's alpha of 0.73 is

satisfactory. We therefore used the factor scores from the principal component factor analysis of the two items sources as the measure of subsidiary internal embeddedness. The index for internal embeddedness ranges from –2.41 to 0.91 with higher scores corresponding to higher levels of a subsidiary's internal embeddedness.

External embeddedness captures the characteristics of the subsidiary's local business network in host country (Hallin et al., 2011). We asked the subsidiary managers to evaluate the importance of collaborations relating to technological knowledge from four different types of business partners for the innovation of the subsidiary: suppliers, customers, competitors and scientific institutes in the country of the focal subsidiary (Andersson et al., 2002; Forsgren et al., 2005). The managers of the subsidiaries were asked to evaluate the degree of importance on a four-point Likert scale (see Appendix 6A in this chapter). A principal component factor analysis confirmed the unidimensionality of the four items (see the Appendix 6B). The Cronbach's alpha of 0.78 is satisfactory. We therefore used the factor scores from the principal component factor analysis as our measure for subsidiary external embeddedness. The index for external embeddedness measure ranges from –2.25 to 1.76 (standardized values) with higher scores corresponding to higher levels of a subsidiary's external embeddedness.

Subsidiary decision-making autonomy

Similar to Chapter 4 and 5, we follow extant literature (Birkinshaw & Hood 2000; O'Donnell 2000), and assess the level of subsidiary decision-making autonomy through a questionnaire item asking the directors of subsidiaries to indicate on a four-point Likert scale to what extent decisions are currently taken by the subsidiary or their headquarters for seven different business activities (see Appendix 5B in Chapter 5). The Cronbach's alpha for the seven items of 0.83 is above the threshold value of 0.70 and therefore satisfactory (Hair et al., 2006). A factor analysis showed that the seven items load on one factor. We therefore used the index of the seven aggregated items as the measure for subsidiary decision-making autonomy. The index ranges from a minimum of 7 to a maximum of 28 with higher scores corresponding to higher degrees of subsidiary decision-making autonomy.

6.3.4. Control variables

We include three sets of control variables in our model. The first set of control variables accounts for subsidiary characteristics. First, we include the R&D intensity of the subsidiary – measured by the number of R&D employees in subsidiaries as a percentage of the subsidiary's total employees – because it is well-known that R&D intensity is an important determinant of a subsidiary's innovative performance (Simões et al., 2002; Taggart & Hood, 1999). Second, we include subsidiary size – measured by the number of employees at the subsidiary – because larger subsidiaries have more resources and knowledge available for innovation than smaller ones (Ciabuschi et al., 2011). Third, we include the age of the subsidiary – calculated by subtracting the year the subsidiary was founded from the current year. Older subsidiaries may have lower levels of innovation than younger ones because of the continued use of outdated knowledge and experience and their resistance to new approaches (Cohen & Levinthal, 1990; Taggart & Hood, 1999).

The second set of control variables concerns the headquarters characteristics. First, we control for the entry mode originally chosen by the MNE: a subsidiary's level of innovation in terms of a greenfield investment or an acquisition may be different. We account for this by including a dummy variable that equals one if the subsidiary is a greenfield location, and zero otherwise (Jindra et al., 2009; Slangen & Hennart, 2008). Second, we include the MNE's main original entry motive in terms of the importance of location-bound knowledge and technology access. The importance of knowledge and technology in a (host) country directly affects a subsidiary's innovative performance (Dunning, 1993). The importance of location-bound knowledge as entry motive was measured on a four-point Likert scale ranging from completely unimportant to extremely important.

Third, we control for country and industry characteristics. we control for industry effects by using the well-known NACE Rev. 2 classification and stratified subsidiaries into (1) mining and quarrying (NACE 05–09) , (2) manufacturing (NACE 10–33), (3) electricity; gas, steam and air conditioning supply (NACE 35), (4) water supply; sewerage, waste management and remediation activities (NACE 36–39), (5) wholesale and retail trade; repair

of motor vehicles and motorcycles (NACE 45–47), (6) transportation and storage (NACE 49–53), (7) information, communication, financial and insurance activities (NACE 58–68), and (8) professional, scientific, technical, administrative and support service activities (NACE 69-82). We constructed seven dummies for the first seven industries (the eighth industry – i.e., professional, scientific, technical, administrative and support service activities – served as the benchmark case and was therefore not included in the model). Second, we control for host-country effects. Our subsidiaries operate in five different countries each with its own path-dependent institutional environment that co-determines firm-level innovation. We constructed four host country dummies, that is, one for the Czech Republic, Romania, Poland and the Slovak Republic, respectively (taking Hungary as the benchmark case that was not included in the model). Third, we also control for home-country effects. The headquarters of the subsidiaries in the sample are located in 17 different home countries. It was not possible to including 16 home-country dummies due to reduced degrees of freedom. We therefore include one dummy to differentiate between developing and developed home countries. Headquarters located in developed countries (11 countries in our case) by definition may have a stronger inclination to innovate because their competitive environment requires them to do so in order to survive than those from developing countries. We used the World Bank classification of countries, where a developed country is defined as a nation having a GDP per capita of US $12,000 or more. The home-country dummy distinguishes whether or not the headquarters of the MNE is located in a developed country.

Common method biases are potentially problematic since they can be a main source of measurement error (Podsakoff et al., 2003). The latter threatens the validity of the conclusions about the associations between measures and has both a random and a systematic component (Bagozzi & Yi, 1991). Our data for dependent and focal explanatory variables were collected from the same respondents. In such a case, self-report data can create false correlations if the respondents have a propensity to provide consistent answers to survey questions that are otherwise not related (Chang et al., 2010). Before using the data we analyzed the possibility of common method variance. The questionnaire was constructed in such a way that the variables were spread across the questionnaire. The database is a

pooled cross-sectional database with observations from different countries. Additionally, our model specification is complex that is a common solution to prevent common method variance (Chang et al., 2010). We also conducted a "Harman's One-factor test" as a post-hoc statistical procedure to check for common method variance bias. We gained five factors with eigenvalues over one, explaining between 24.95 and 8.14 percent of variance. This result shows that diversity of factors is captured by the model constructs and a single factor would unlikely explain the covariance in the exogenous and endogenous constructs. Taken together, we have no reasons to expect that common method bias is driving our results.

We performed the usual tests to obtain reliable estimates (Hair et al., 2006). The latter yielded satisfactory results: neither heteroscedasticity nor non-normality is an issue. All correlation coefficients are maximum 0.47 indicating that there are no issues with multi-collinearity. We also tested for multi-collinearity by calculating the variance inflation factor (VIF) for each of the regression coefficients. Except for the squared terms of decision-making autonomy, the maximum VIF value in the model is 4.5 and thus well below the cut-off value of 10 (Hair et al., 2006). There is no reason that multi-collinearity should cause misinterpretation of the predictive ability of the regression results.

6.4. Empirical results

6.4.1. Main regression results

Means, standard deviations and correlations are provided in Table 6.1. The results from the hierarchical Tobit regression models with respect to innovation intensity are reported in Table 6.2 (both internal and external embeddedness). Our third set of hypotheses relates to an interaction effect and can be tested with a product-term analysis (Baron & Kenny, 1986). The interaction variables were mean-centered before entering them into the regression in order to avoid multicollinearity problems.

The various fit parameters show that our models increasingly fit the data better. For example, with respect to the interaction effects, Table 6.2 shows that value for the log

likelihood improves from –559.48 in Model 1 to –384.65 in Model 8. This improvement in model fit can be observed for all of our regression models.

We first report the findings for our baseline model including only the control variables. In column 2 and 3 of Table 6.2 we add decision making autonomy and its squared term, respectively. This is the models we estimated in Chapter 5. It shows that the relation between decision-making autonomy and subsidiary innovation is U-shaped, a result we already described extensively in Chapter 5. In Model 4 and 5 we enter internal and external embeddedness separately. Model 6 includes both types of embeddedness simultaneously.

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Table 6.1. Statistical description and correlations (n = 95)[a]

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Innovation intensity (%)	22.6	18.7														
2. R&D intensity (%)	0.09	0.15	0.38**													
3. Size of subsidiary (log)	4.50	1.25	−0.00	−0.23												
4. Age of subsidiary	13.9	11.0	0.01	−0.07	0.19*											
5. Parent's entry mode (greenfield)	0.61	0.49	0.05	0.05	−0.17*	0.24*										
6. Parent's motive to access location-bound knowledge and technology	2.26	1.07	0.10	0.06	0.01	0.04	−0.08									
7. Host country dummy (the Czech Republic)	0.17	0.38	0.22*	−0.07	0.15	−0.05	−0.19	0.06								
8. Host country dummy (Romania)	0.14	0.35	−0.12	−0.09	0.12	−0.04	−0.03	−0.21*	−0.19							
9. Host country dummy (Poland)	0.50	0.40	−0.03	0.08	−0.19*	0.07	0.20*	0.06	−0.47**	−0.42**						
10. Host country dummy (the Slovak Republic)	0.08	0.27	0.12	0.14	−0.09	−0.01	−0.14	−0.07	−0.14	−0.12	−0.30**					
11. Home country dummy (developed country)	0.89	0.30	0.05	−0.02	0.01	0.03	0.14	−0.07	−0.01	−0.14	0.14	−0.01				
12. Decision-making autonomy (standardized)	0.00	1.00	−0.15	−0.06	−0.07	−0.10	−0.22*	−0.01	−0.08	0.23*	−0.03	−0.17	0.02			
13. Decision-making autonomy squared (standardized)	0.00	1.00	−0.11	−0.05	−0.05	−0.11	−0.22*	−0.03	−0.07	0.24*	−0.06	−0.15	0.02	0.99		
14. Internal embeddedness of subsidiary (factor scores)	0.00	1.00	0.08	0.09	−0.03	−0.10	0.08	−0.18	−0.21*	−0.01	0.16	0.09	−0.03	−0.07	−0.06	
15. External embeddedness of subsidiary (factor scores)	0.00	1.00	0.02	0.01	−0.16	−0.15	0.01	−0.36**	−0.12	−0.02	−0.07	0.22	0.01	−0.03	−0.02	0.26**

[a]All seven industry dummies are included with a maximum correlation coefficient of 0.47. *p<0.05; **p<0.01.

The results indicate that internal embeddedness is not significant, meaning we find no support for our first hypothesis. External embeddedness has a significant positive relation with innovation, albeit only when including internal and external embeddedness simultaneously. This means that our Hypothesis 2 is supported. Models 7 and 8 test our interaction effect between decision-making autonomy and internal and external embeddedness, respectively. The interaction with internal embeddedness in model 7 shows no significant effect (although it should be noted that the p-values are 0.053 for internal embeddedness, 0.065 for the interaction variable between internal embeddedness and decision-making autonomy, and 0.080 for the interaction variable between internal embeddedness and decision-making autonomy squared, making them significant at 10 percent). This means that our Hypothesis 3a is not supported. Model 8 shows that the interaction between decision-making autonomy, its squared term and external embeddedness is significant ($\beta = -174.2$, $p < 0.05$ for interaction between decision-making autonomy and external embeddedness, and $\beta = 88.5$, $p < 0.05$ for decision-making autonomy squared and external embeddedness). To obtain a better insight in the nature of the interaction Figure 6.1 plots the relationship between subsidiary decision-making autonomy, external embeddedness and innovation.

Figure 6.1 plots subsidiary innovation on the vertical axis. Subsidiary decision-making autonomy is plotted on the horizontal axis, and external embeddedness on the third (z) axis. The figure shows that as external embeddedness increases, subsidiary innovation increases as well at both high and low levels of decision making autonomy. The figure also shows the non-linear effect of decision-making autonomy on subsidiary innovation. At the mean level of external embeddedness (where external embeddedness is zero, because it is a standardized variable), we observe that the relation between decision-making autonomy and subsidiary innovation is slightly U shaped.

Table 6.2. Internal and external embeddedness, subsidiary decision-making autonomy (DMA) and innovation intensity (Tobit estimates)[a]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	−5.99 (11.3)	12.2 (13.8)	85.9 (30.7)**	70.8 (33.0)*	80.4 (33.6)*	65.4 (32.5)*	27.7 (37.8)*	75.3 (32.4)*
Control variables								
R&D intensity (%)	30.8 (7.69)**	29.3 (7.59)**	24.5 (7.62)**	42.9 (11.8)**	41.4 (12.1)**	41.6 (11.7)**	41.9 (11.8)**	40.8 (11.4)**
Size of subsidiary (log)	2.12 (1.37)	1.76 (1.35)	0.88 (1.36)	0.02 (0.00)	0.02 (0.00)	0.02 (0.00)	0.02 (0.00)	0.01 (0.00)
Age of subsidiary	0.01 (1.15)	−0.01 (01.5)	0.03 (0.15)	0.05 (0.15)	0.02 (0.15)	0.07 (0.15)	0.04 (0.15)	0.02 (0.15)
Parent's entry mode (greenfield)	0.54 (3.16)	−1.30 (3.22)	2.26 (3.17)	2.02 (3.81)	−0.61 (3.66)	2.54 (3.74)	2.39 (3.75)	4.07 (3.75)
Parent's motive to access location-bound knowledge and technology	1.35 (1.42)	1.24 (1.40)	1.79 (1.38)	2.05 (1.68)	1.38 (1.78)	2.68 (1.76)	2.57 (1.74)	2.06 (1.73)
Host country dummy (the Czech Republic)	14.7 (6.14)*	13.2 (6.08)*	11.6 (5.96)*	19.9 (7.04)**	18.5 (6.97)**	24.2 (7.09)**	25.7 (7.03)**	23.6 (6.90)**
Host country dummy (Romania)	6.93 (6.50)	8.80 (6.44)	7.64 (6.31)	8.54 (7.56)	6.03 (7.40)	10.2 (7.37)	10.3 (7.25)	7.66 (7.26)
Host country dummy (Poland)	7.69 (5.51)	8.03 (5.41)	8.28 (5.29)	12.2 (6.24)	12.1 (6.06)*	13.5 (6.22)*	13.9 (6.13)*	12.1 (6.06)*
Host country dummy (the Slovak Republic)	13.8 (7.26)	11.8 (7.19)	10.3 (7.06)	14.5 (8.55)	8.92 (8.11)	14.6 (8.36)	12.8 (8.37)	12.2 (8.26)
Home country dummy (developed country)	1.54 (5.56)	3.00 (5.51)	2.79 (5.38)	4.21 (5.52)	5.69 (5.64)	4.81 (5.41)	3.38 (5.46)	2.71 (5.52)
Main variables								
Decision-making autonomy		−0.80 (0.36)*	−8.09 (2.75)**	−8.57 (3.23)**	−9.05 (3.30)**	−8.41 (3.17)**	−5.08 (3.59)	−3.65 (3.68)
Decision-making autonomy squared			0.18 (0.06)**	0.21 (0.08)**	0.22 (0.08)*	0.24 (0.07)**	0.12 (0.08)	0.09 (0.09)
Internal embeddedness of subsidiary				1.01 (2.01)	–	1.17 (2.03)	71.8 (37.2)	0.53 (2.01)
External embeddedness of subsidiary					0.44 (1.96)	1.82 (3.05)*	1.71 (2.02)	93.9 (37.2)*
Internal embeddedness x DMA							−120.4 (64.3)	–
Internal embeddedness x DMA squared							62.2 (34.4)	–
External embeddedness x DMA								−174.2 (70.5)*
External embeddedness x DMA squared								88.5 (36.5)*
N	134	134	134	98	101	95	95	95
LR Chi squared	29.09	33.85	40.85	39.46	38.03	42.81	46.37	48.81
Log likelihood	−559.48	−557.10	−553.60	−402.22	−417.14	−387.65	−385.87	−384.65
P_value	0.010	0.001	0.000	0.002	0.003	0.001	0.001	0.000

[a] Standard errors are listed in parentheses. All seven industry dummies are included, but none of these are significant. *p<0.05; **p<0.01.

When external embeddedness increases, we can see that the U-shaped relationship between subsidiary decision-making autonomy and innovation becomes more pronounced, which is supporting our Hypothesis 3b. However, we also find that when external embeddedness decreases to one standard deviation below the mean (external embeddedness has a score of −1, as it is standardized), the relation between subsidiary decision-making autonomy and innovation becomes virtually horizontal. In other words, the U-shaped relationship between subsidiary decision-making autonomy and innovation disappears. At very low levels of external embeddedness, Figure 6.1 even suggests that the U-shaped effect becomes hump-shaped reversing the relationship between decision-making autonomy and subsidiary innovation. It is however easily shown that this is an artifact of the extrapolated extreme scores of a limited number of firms. As observed on the range of the data, we see that most of subsidiaries in our sample are on external embeddedness above the mean. We see that the total numbers of subsidiaries with value of external embeddedness above the mean are 67 subsidiaries, the rest is below the mean value of external embeddedness. Outliers drive the hump-shaped effect reversing relationship between subsidiary decision-making autonomy and innovation.

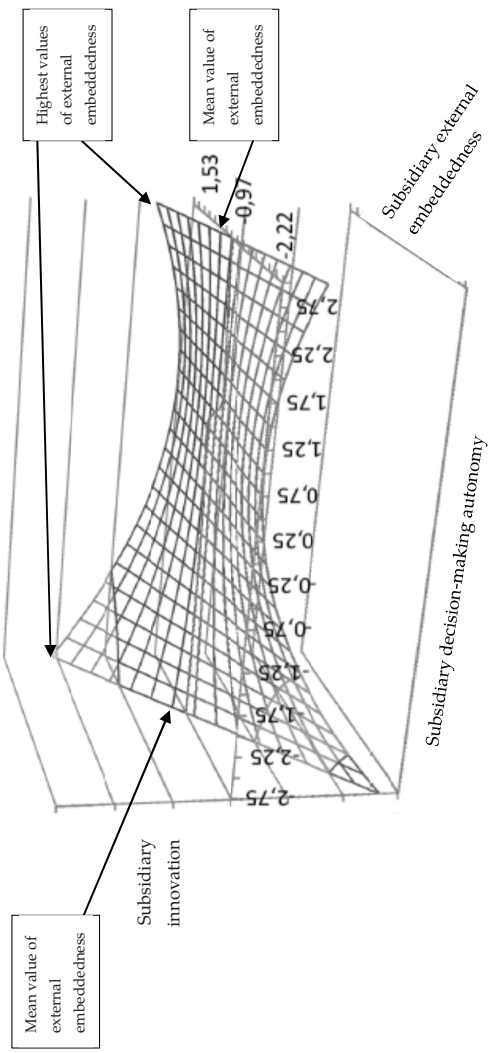

Figure 6.1. The interaction between external embeddedness and decision-making autonomy on innovation intensity

6.4.2. Robustness analysis

As tests of robustness, we performed several additional analyses. These results are summarized in Panels B through E in Table 6.3. Given the significant effect of external embeddedness in the interaction model, we only report the robustness tests of this model. To facilitate the comparison with our earlier findings, Panel A repeats the initial results (i.e., those from Model 8 in Table 6.2).

First, in Panel B we estimated the models for innovation intensity (Tobit estimates) with an alternative measurement for our key independent variable, i.e. external embeddedness of a subsidiary. Recall that external embeddedness is originally measured by factor scores. As an alternative, we aggregated the scores of the four items into one index (Cronbach's alpha is 0.78). As a test for robustness we estimated our Tobit models with this aggregated index for external embeddedness. This did not affect the regression results (with $\beta = 33.3$, $p < 0.05$ for external embeddedness, with $\beta = -3.24$, $p < 0.05$ for the interaction term between external embeddedness and decision-making autonomy, and with $\beta = 0.07$, $p < 0.05$ for the interaction term between external embeddedness and the squared decision-making autonomy term).

Second, in Panel C we estimated the Tobit models using an R&D dummy as a control variable instead of R&D intensity. The reason for using a dummy is that our data for R&D intensity is only limited available. Using the dummy measurement we are able to increase the number of observations from 95 (for R&D intensity) to 190 (for R&D measured by means of a dummy). The regression results for this larger sample are similar to our main results (with $\beta = 57.7$, $p < 0.05$ for external embeddedness, $\beta = -105.2$, $p < 0.05$ for the interaction term between external embeddedness and decision-making autonomy, and with $\beta = 51.2$, $p < 0.05$ for the interaction term between external embeddedness and the squared term of decision-making autonomy).

Table 6.3. Results of the robustness analyses[a]

	Original findings	*Additional tests*			
	Panel A: Initial results extracted from Table 2 [Model (5)]	*Panel B:* External embeddedness measured by summing scores	*Panel C:* Controlling R&D intensity with a dummy instead of R&D intensity	*Panel D:* Including German domestic subsidiaries	*Panel E:* DMA measured only by research and innovation
Constant	75.3 (32.4)*	−382.7 (132.0)*	54.9 (28.3)	82.4 (25.6)**	−7.10 (23.3)
Control variables					
R&D dummy	–	–	0.60 (2.97)	–	
R&D intensity (%)	40.8 (11.4)**	40.9 (11.4)**	–	−0.09 (0.32)	12.4 (7.48)*
Size of subsidiary (log)	0.01 (0.00)	0.01 (0.00)	0.03 (0.00)	0.03 (0.00)	0.01 (0.00)
Age of subsidiary	0.02 (0.15)	0.02 (0.15)	0.15 (0.12)	−0.15 (0.15)	0.02 (0.15)
Parent's entry mode (greenfield)	4.07 (3.75)	4.02 (3.75)	0.10 (0.14)	−1.45 (2.88)	−0.04 (0.15)
Parent's motive to access location-bound knowledge and technology	2.06 (1.73)	2.08 (1.74)	3.14 (3.23)	1.69 (1.29)	3.26 (3.64)
Host country dummy (the Czech Republic)	23.6 (6.90)**	23.6 (6.90)**	13.5 (5.87)*	8.66 (5.51)	19.6 (7.14)**
Host country dummy (Romania)	7.66 (7.26)	7.72 (7.26)	5.81 (5.68)	−6.56 (6.08)	6.42 (7.49)
Host country dummy (Poland)	12.1 (6.06)*	12.1 (6.06)*	9.96 (4.68)*	−0.01 (3.76)	13.3 (6.26)*
Host country dummy (the Slovak Republic)	12.2 (8.26)	12.2 (8.27)	8.33 (5.97)	0.85 (8.30)	15.9 (7.82)*
Host country dummy (East Germany)	–	–	–	10.3 (6.45)	
Home country dummy (developed country)	2.71 (5.52)	2.63 (5.53)	−0.31 (4.84)	4.46 (4.29)	3.76 (5.52)
Main variables					
Level of subsidiary's decision-making autonomy	−3.65 (3.68)	−36.0 (18.3)*	−5.37 (2.76)*	−5.65 (2.72)*	−8.74 (13.3)
Level of subsidiary's decision-making autonomy squared	0.09 (0.09)	0.84 (0.44)*	0.14 (0.07)*	0.14 (0.05)*	2.09 (2.46)
Internal embeddedness of subsidiary	0.53 (2.01)	0.52 (2.01)	0.47 (1.64)	0.97 (1.53)	0.83 (2.07)
External embeddedness of subsidiary	93.9 (37.2)*	33.3 (12.3)*	57.7 (26.3)*	56.8 (28.6)*	47.8 (16.3)**
External embeddedness x DMA	−174.2 (70.5)*	−3.24 (1.32)*	−105.2 (51.9)*	−105.3 (54.0)*	−91.5 (31.7)**
External embeddedness x DMA squared	88.5 (36.5)*	0.07 (0.03)*	51.2 (27.9)*	56.3 (29.9)*	52.0 (18.6)**
N	95	95	190	253	103
LR Chi squared	48.81	48.75	26.19	39.32	37.90
Log likelihood	−384.65	−384.68	−510.74	−1091.5	−422.04
P_value	0.000	0.000	0.019	0.018	0.018

[a] Robust standard errors are listed in parentheses. All seven industry dummies are included, but none of these are significant. *p<0.05; **p<0.01.

Third, next to subsidiary level information for the five eastern European countries, we have additional data for subsidiaries located in former East Germany. We estimated the models including East German subsidiaries, meaning that we consider East Germany as a (sixth) host country. The reason to include East Germany is that the East German context still resembles the level of development as the five other Central and Eastern European countries. Despite the re-unification of East and West Germany, there is still a substantial difference between the regions in terms of technology, industrial structure and foreign direct investments which affect the organizational structure and innovation of business units. By including East German subsidiaries in our sample we increase the number of observations from 95 to 253. The regression results in panel D are similar to our main findings (with β = 56.8, $p < 0.05$ for external embeddedness, $\beta = -105.3$, $p < 0.05$ for the interaction term between external embeddedness and decision-making autonomy, and with $\beta = 56.3$, $p < 0.05$ for the interaction term between external embeddedness and the squared term of decision-making autonomy).

Fourth, recall that our decision-making autonomy measure is constructed as an index of decisions concerning seven different business activities. Thus, our decision-making autonomy measure index is not necessarily related to the knowledge-related activities of the subsidiary. For that reason, we estimated our Tobit regressions with decision-making autonomy referring to only one business activity, i.e. research and innovation (see Appendix 5B in Chapter 5). The results in Panel E are again in line with the main findings (with β = 47.8, $p < 0.01$ for external embeddedness, $\beta = -91.5$, $p < 0.01$ for the interaction term between external embeddedness and autonomy, and with $\beta = 52.0$, $p < 0.01$ for the interaction term between external embeddedness and the squared decision-making autonomy term). These robustness tests corroborate our main findings.

6.5. Discussion and conclusions

In this chapter, we follow up on Chapter 5 and advance our understanding of how internal and external embeddedness are related to subsidiary innovation. We build on business network theory and the perspective centering on the role of headquarters in subsidiary

innovation processes, leading us to develop hypotheses concerning the expected positive direct effects of internal and external embeddedness on subsidiary innovation. Moreover, as the theoretical arguments on embeddedness and subsidiary decision-making autonomy are related, we also test for the interaction between embeddedness and decision-making autonomy and their joint effect on subsidiary innovation. Using a subsidiary-level dataset of 95 subsidiaries in the Czech Republic, Hungary, Poland, Romania and the Slovak Republic, our empirical results show that the level of subsidiary external embeddedness is positively associated with the degree of subsidiary innovation. We find a modest direct relation between external embeddedness and subsidiary innovation, and no such relation for internal embeddedness. This direct relation of external embeddedness disappears when including the interaction between external embeddedness and decision-making autonomy. This interaction effect is significant, such that as the level of external embeddedness increases, the U-shaped relationship between subsidiary decision-making autonomy and innovation becomes more pronounced. At both high and low levels of decision-making autonomy we find that external embeddedness is positively related to subsidiary innovation. This suggests that subsidiaries benefit from being externally embedded, whatever the level of decision-making autonomy. Our results show that the U-shaped relationship between subsidiary decision-making autonomy and subsidiary innovation that we established in Chapter 5, is contingent on the level of external embeddedness. At low levels of external embeddedness, there is no relation between subsidiary decision-making autonomy and subsidiary innovation. At the mean value of external embeddedness, we found that the relation between decision-making autonomy and subsidiary innovation is slightly U-shaped. It is when the importance of external networks increases, and a structure has to be developed who makes decisions when working with external partners that it is important to either have headquarters make decision or allocate decision making autonomy to subsidiaries (and U-shaped relationship results).

We should address two limitations of this chapter that could serve as routes for follow up research. First, although we control for the characteristics of subsidiary, parent, industry, home and host countries, this chapter did not examine the role of other factors such as a subsidiary's absorptive capacity required to engage in internal and external

embeddedness and management initiative in response to local incentives. These factors could affect the subsidiaries' embeddedness with internal and external counterparts (Figueiredo, 2011; Meyer et al., 2011). For example, the subsidiary's absorptive capacity required to engage in internal and external networks in developing countries could be different from those in developed countries (Figueiredo, 2011). Therefore, future research should take this into account. Second, our data were collected at the subsidiary level. Therefore, this chapter cannot capture the importance of the effect of internal and external embeddedness on innovation beyond the perception of the subsidiary managers (Ciabuschi et al., 2011). Furthermore, we cannot know the role of a headquarters in shaping and designing intra-firm and inter-firm networks (Lorenzoni & Lipparini, 1999) because headquarters may manage the complexities of multiple embeddedness (Meyer et al., 2011). Hence, we cannot distinguish between the importance of embeddedness at different levels, i.e., the subsidiary, division/business area, or headquarters (Ciabuschi et al., 2011). Future research may take these into account so that the theoretical and practical implications can be even further developed. Third, the direction of causality is almost always a concern in cross-sectional studies since the possibility of reverse causation cannot be ruled out automatically. Indeed, it is worth mentioning that the majority of the case-study subsidiaries had accumulated previous capabilities (Cohen & Levinthal, 1990) or that subsidiaries that developed more links with local organizations for sophisticated projects (e.g., Omega and Epsilon) seem to have done so because they had been accumulating high innovation capability levels (Figueiredo, 2011). Therefore, reverse causality may potentially be an issue with respect to our analysis of decision-making autonomy, embeddedness and subsidiary innovation. That is, subsidiary innovation causes the degree of decision-making autonomy rather than the other way round. Theoretically, no theory predicts this direction, but it is worthwhile to investigate this issue. To tackle this issue, we can lag variables or use instrumental variable(s).

In spite of these limitations, this chapter offers important implications for our scholarly and practical understanding of the interaction between external embeddedness and decision-making autonomy on subsidiary innovation. First, this chapter implies that the U-shaped relationship between decision-making autonomy and subsidiary innovation

found in Chapter 5 is contingent on level of a subsidiary's external embeddedness. In particular, when the level of external embeddedness increases, the U-shaped relationship between decision-making autonomy and subsidiary innovation becomes steeper. This implication confirms that both business network theory and the headquarters view play an important role in explaining this relation, that is, they are not mutually exclusive. Second, our results imply that to obtain an optimal level of subsidiary innovation, headquarters managers either should let subsidiaries making full decisions or give almost no decision-making authority, especially when subsidiaries are highly embedded in external networks in the host country.

APPENDIX

6A. Measure of Internal and external embeddedness (taken from the questionnaire)

Please indicate the importance of the following cooperation partners as source for knowledge relevant for innovation in your enterprise. Please choose between: 1) not important, 2) little important, 3) important or 4) very important.

	Not important	Little important	Important	Very important
Other units of your foreign investor's enterprise within your country				
Headquarters or other units of your foreign investor's enterprise group abroad				
External suppliers within your country				
External customers within your country				
External firms of the same sector within your country				
Universities and other public sector research within your country				

6B. Rotated factor loadings of the seven items concerning internal and external embeddedness (extracted from Stata) – principal component factor method

Variable	**Factor 1**	**Factor 2**
Other units of your foreign investor's enterprise within your country	0.483	**0.588**
Headquarters or other units of your foreign investor's enterprise group abroad	-0.070	**0.849**
External suppliers within your country	**0.696**	-0.243
External customers within your country	**0.707**	0.001
External firms of the same sector within your country	**0.695**	0.044
Universities and other public sector research within your country	**0.754**	-0.315

Table 6C. Rotated factor loadings of only the four items concerning external embeddedness of factor 1 in Table 6B: (extracted from Stata) – principal component factor method

Variable	Factor 1
External suppliers within your country	0.714
External customers within your country	0.767
External firms of the same sector within your country	0.797
Universities and other public sector research within your country	0.711
Cumulative	0.599

6D. Rotated factor loadings of only the two sources concerning internal embeddedness of factor 2 in Table 6B: (extracted from Stata) – principal component factor method

Variable	Factor 1
Other units of your foreign investor's enterprise within your country	0.804
Headquarters or other units of your foreign investor's enterprise group abroad	0.802
Cumulative	0.649

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Samenvatting (Summary in Dutch)

Het doel van dit proefschrift is om tot een beter begrip te komen van de oorzaken en gevolgen van besluitvormingsautonomie van dochterondernemingen in de relatie tussen hoofdkantoor en dochteronderneming binnen het netwerk van een multinational enterprise (MNE). De belangrijkste onderzoeksdoelstellingen in dit proefschrift zijn de relaties tussen besluitvormingsautonomie van dochterondernemingen en de context van het thuisland en het gastland, en de rol hiervan in innovatie door de dochteronderneming. De belangrijkste onderzoeksvraag is tweeledig:

> (1) Wordt besluitvormingsautonomie van dochterondernemingen bepaald door de context van het thuisland en het gastland? En welke invloed hebben de verschillen tussen de context van het thuisland en het gastland op besluitvormingsautonomie van dochterondernemingen? (Deze vragen beantwoorden we in hoofdstuk 3 en 4.)
>
> (2) Wat is de rol van besluitvormingsautonomie van dochterondernemingen in innovatie door de dochteronderneming? En welke interactie is er tussen besluitvormingsautonomie van dochterondernemingen en de mate van inbedding van de dochteronderneming binnen het MNE-netwerk en het externe locale netwerk? (Deze vragen beantwoorden we in hoofdstuk 5 en 6.)

Dit proefschrift bestaat uit zes hoofdstukken. Hoofdstuk 1 beschrijft het belang en de doelstelling, de aanpak en de scope, de theoretische en empirische bijdragen en de theoretische en praktische gevolgen van dit onderzoek. Verder bevat dit hoofdstuk een samenvatting van de empirische bevindingen van het onderzoek. In hoofdstuk 2 besteden we uitgebreid aandacht aan zeven theorieën met betrekking tot de determinanten en gevolgen van besluitvormingsautonomie van dochterondernemingen, waaronder het integratie-responsiviteitskader, de theorie van afhankelijkheid van middelen, de bemiddelingstheorie, de institutionele theorie, de theorie van zakelijke netwerken, de informatieverwerkingstheorie en het perspectief dat de nadruk legt op de rol van hoofdkantoren in het functioneren van dochterondernemingen. Met behulp van deze

theorieën en de kritische beoordeling van eerdere empirische onderzoeken kunnen we een aantal onderzoekshiaten identificeren. Op basis hiervan kunnen we een onderzoeksprogramma afbakenen met specifieke onderzoeksvragen die zullen worden beantwoord in de volgende hoofdstukken (hoofdstuk 3, 4, 5 en 6) van dit proefschrift. Met name in hoofdstuk 2 worden vier belangrijke aandachtspunten benoemd die betrekking hebben op (a) de rol van de institutionele omgeving van het thuisland en het gastland; (b) de rol van de afstand tussen het thuisland en de gastlanden in het bepalen van de besluitvormingsautonomie van dochterondernemingen; (c) de rol van besluitvormingsautonomie van dochterondernemingen in innovatie door de dochteronderneming; en (d) de rol van de inbedding van dochterondernemingen in de relatie tussen besluitvormingsautonomie van en innovatie door dochterondernemingen.

Het belangrijkste doel van hoofdstuk 3 is een empirische ontrafeling van de onderliggende oorzakelijke structuur die de besluitvormingsautonomie van dochterondernemingen bepaalt. Met behulp van de institutionele theorie stellen we dat de verdeling van besluitvormingsautonomie over het hoofdkantoor en de operationele eenheid vooral een reactie is op de institutionele context van beide eenheden: de moedermaatschappij en de dochteronderneming. De reden hiervoor is dat een MNE een bestuursstructuur is die dochterondernemingen aanstuurt in veel en heel verschillende institutionele contexten. Onze stellingen worden getest op een database die is afgeleid van Orbis en waarin 263 Europese dochterondernemingen van 18 MNE's in 25 Europese landen zijn opgenomen. De empirische resultaten onderschrijven ons institutionele perspectief en laten zien dat de besluitvormingsautonomie van de dochterondernemingen sterk verbonden is met de institutionele omgevingen van het thuisland en het gastland waarin respectievelijk het hoofdkantoor en de dochteronderneming zijn gevestigd. De resultaten blijven ook overeind als we ze verifiëren aan de hand van verschillende belangrijke kenmerken van de moedermaatschappij en de dochteronderneming.

In hoofdstuk 4 onderzoeken we het effect van de afstand tussen het thuisland en de gastlanden op de besluitvormingsautonomie van dochterondernemingen volgens de theorie van zakelijke netwerken en de bemiddelingstheorie. Uit eerdere onderzoeken is gebleken dat de eigenschappen van het bedrijf of de context belangrijk zijn om de

besluitvormingsautonomie van dochterondernemingen te kunnen begrijpen. Wij stellen dat de literatuur over dochterondernemingen grotendeels voorbijgaat aan de afstand tussen de context van het thuisland en het gastland als essentiële determinant voor besluitvormingsautonomie voor dochterondernemingen. De theoretische argumenten voor afstand en besluitvormingsautonomie van dochterondernemingen leiden tot twee verschillende opvattingen. Volgens de bemiddelingstheorie bestaat er een negatieve relatie tussen afstand en autonomie, terwijl de theorie van zakelijke netwerken juist een positief effect van afstand op autonomie voorspelt. Dit is een van de eerste onderzoeken waarin het effect van afstand op autonomie wordt onderzocht met behulp van de unieke dataset van het Institute for Economic Researh Halle (IWH). Deze dataset bevat gegevens uit meerdere landen en meerdere branches van 170 dochterondernemingen in vijf Centraal- en Oost-Europese landen (CEE). De dochterondernemingen rapporteren aan hoofdkantoren in 21 verschillende thuislanden. Uit de resultaten blijkt dat een heel verfijnd perspectief van afstand vereist is en dat de culturele, geografische en economische afstand de besluitvormingsautonomie van dochterondernemingen beperkt. Dit hoofdstuk beschrijft de belangrijke rol van afstand tussen thuisland en gastlanden bij het bestuderen van besluitvormingsautonomie van dochterondernemingen.

In hoofdstuk 5 wordt het effect van besluitvormingsautonomie op innovatie door de dochteronderneming geanalyseerd op basis van het perspectief dat is gericht op de rol van het hoofdkantoor en de theorie van zakelijke netwerken. Het doel van dit hoofdstuk is om te onderzoeken hoe besluitvormingsautonomie van invloed is op de mate van innovatie door de dochteronderneming. Dochterondernemingen worden steeds meer gezien als bronnen van innovatie en als vehikel om nieuwe competenties internationaal over te dragen. De vraag hoeveel besluitvormingsautonomie dochterondernemingen zouden moeten hebben, vormt een essentieel onderdeel van het managen van de relatie tussen hoofdkantoor en dochteronderneming. Met behulp van twee complementaire theoretische perspectieven veronderstellen we dat er zowel een negatief als een positief verband bestaat tussen besluitvormingsautonomie en innovatie door de dochteronderneming en dat er een niet-lineaire relatie bestaat tussen de twee factoren. We testen onze hypothese aan de hand van de IWH-database met gegevens uit meerdere landen en branches en maken daarbij gebruik

van gegevens uit onderzoeken onder 134 dochterondernemingen gevestigd in vijf CEE-landen uit 23 thuislanden. De empirische resultaten wijzen op een niet-monotone U-vormige relatie tussen besluitvormingsautonomie van dochterondernemingen en de mate van innovatie. Hoofdstuk 5 biedt dan ook nieuwe inzichten over het belang van besluitvormingsautonomie in de innovatieprocessen van dochterondernemingen.

In hoofdstuk 6 onderzoeken we ten slotte de rol van besluitvormingsautonomie van dochterondernemingen in de relatie tussen innovatie door de dochteronderneming en de inbedding van de dochteronderneming. Uit eerder werk is het belang gebleken van interne en externe verbanden voor innovatie door de dochteronderneming. Maar ondanks alle inspanningen is de relatie tussen inbedding en innovatie nog steeds onderwerp van discussie. Wij stellen dat de internationale bedrijfsliteratuur grotendeels voorbijgaat aan besluitvormingsautonomie als essentiële determinant van de relatie tussen inbedding en innovatie. Naar onze mening is het effect van inbedding op innovatie door de dochteronderneming afhankelijk van de mate van besluitvormingsautonomie van de dochteronderneming. Ons onderzoek is een van de eerste onderzoeken waarin het effect van besluitvormingsautonomie op de relatie tussen inbedding en innovatie wordt onderzocht met behulp van de unieke, op onderzoeksgegevens gebaseerde IWH-dataset van dochterondernemingen in CEE-landen. De empirische resultaten vormen overtuigend bewijs voor ons afhankelijkheidsperspectief. Dit hoofdstuk biedt nieuw inzicht in de rol van besluitvormingsautonomie bij het absorberen van externe kennis om innovatie door de dochteronderneming te verbeteren.

De hoofdstukken 3, 4, 5 en 6 van dit proefschrift bieden samen “empirische wetmatigheden”. De algehele conclusie van dit onderzoek is dat MNE's te maken hebben met een wisselwerking: bij een grotere afstand van het thuisland is het waarschijnlijker dat het hoofdkantoor op de lokale expertise en kennis van de dochteronderneming vertrouwt (hoofdstuk 2), vooral in sterk geïnstitutionaliseerde landen waar lokale inbedding belangrijk is (hoofdstuk 3). Als de afstand toeneemt, dan neemt de mate van besluitvormingsautonomie af (hoofdstuk 4), terwijl voor meer innovatie zowel het laagste als het hoogste niveau van besluitvormingsautonomie van de dochteronderneming het beste is (hoofdstuk 5), vooral als de dochteronderneming extern sterk ingebed is (hoofdstuk 6).

Deze algehele conclusie is een afspiegeling van het belangrijkste en bekendste spanningsveld bij internationale bedrijven en in internationaal management: hoe de beste balans te vinden tussen lokaal reactievermogen en mondiale coördinatie en integratie. Ondanks de aangegeven beperkingen van dit onderzoek, vertrouwen wij erop dat dit proefschrift een nieuw perspectief biedt op deze belangrijke kwestie.